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MONTHLY REPORT

OF

THE DEPARTMENT OF AGRICULTURE,

FOR

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MONTHLY REPORT.

DEPARTMENT OF AGRICULTURE,
Washington, D. C., May, 1868.

SIR: I herewith submit, for publication in the April report of this division, a statement showing the Condition of Farm Stock of the United States at the present time; a continuation of the Special Statistics of Farm Resources and Products; a concise statement of the distinguishing features of rinderpest; and facts from various quarters.

Respectfully,

J. R. DODGE, *Statistician.*

Hon. HORACE CAPRON,
Commissioner of Agriculture.

CONDITION OF FARM STOCK OF THE UNITED STATES.

The customary review of the diseases of domestic animals during the year, and their condition upon emerging from winter quarters, has been taken, based upon returns to the April circulars from all sections of the country, which were very full and evidently considered with care. The practical lesson of this mass of information, if heeded, would be worth millions to the country, though it is not to be expected that disease may be warded off entirely. The following letter, from the Commissioner to the chairman of the Committee on Agriculture of the House of Representatives, is inserted as a suitable introduction to the detailed statements following:

DEPARTMENT OF AGRICULTURE,
Washington, D. C., May 15, 1868.

SIR: I have the honor to acknowledge your favor of the 7th instant, relative to "the extent of the prevalence of diseases of domestic animals in this country at the present time," and also to the propriety and value of an investigation of the nature and causes and possible cure and prevention of these diseases.

The subject is one of the first importance, affecting the interests of farmers scarcely more than the well-being of all consumers of meats. Could three-fourths of the diseases of farm stock be prevented, the cost of all meats would be lessened, and food production proportionally increased.

The annual inquiry into the condition of farm stock in the United States at the close of winter, and the diseases and mortality of the past year, has just been made by the statistical division of this department, and its results have been analyzed and condensed. It shows that the past winter has been unusually favorable to the health of domestic animals, and that leanness and feebleness, which might almost be said to be the rule throughout whole States one year ago, are now the rare exception. The uniformly low temperature of the western States, with the absence of severe storms, while causing the consumption of an unusual amount of hay, grain, and fodder, proved conducive to health and fine condition; so that returns of "condition" are everywhere burdened with such phrases as "very good," "extra good," "excellent," "better than for years," and "better than was ever before seen." As an instance, and not the only one,

showing total exemption from leanness, fifty counties of the State of Iowa report "very good;" a few others in equivalent terms, with no county acknowledging inferior condition. The long drought of last autumn in the Ohio valley so injured late pasturage as to affect injuriously cattle and sheep in a large area, and to carry the injury to a certain extent through the winter; and in some places cattle suffered from scarcity of water through the same cause. In the New England States the winter was also very favorable to health and growth. To some extent sheep suffered from the neglect which invariably follows depression and temporary unprofitableness of any agricultural interest in this country. In the southern States both cattle and sheep were affected, more or less seriously, by the invariable neglect and utter lack of shelter to which they are subjected. It is well known that no provision, either of food or shelter, is made for stock in the more southern States, with very rare exceptions, and to a less general extent this may be said of the northern and western States; and yet, in many cases, especially where cattle have wintered in canebrakes, they have come out fat in the spring. A larger portion came from their winter quarters of fence corners or old fields, lean, hungry, even emaciated, while the bones of many others strew the waste places on which they have starved.

The mortality resulting from exposure, starvation, and other common forms of disease, makes a considerable aggregate of loss; sometimes but two or three per centum, in some localities five, and occasionally ten, and even twenty per centum of the total number of cattle and sheep in the township or county. The occurrence of epizoötics and contagious diseases often sweeps off a large portion of the stock of whole neighborhoods. In the item of swine twenty-five per centum of loss from hog cholera is not unfrequent in a county, and fifty per centum has been reported to this department in several instances.

Notwithstanding the fact that prevailing diseases have been less fatal and general than in previous seasons, cattle have wintered much more successfully than in former years. The aggregate losses of farm animals of all kinds for the past twelve months could not be covered by fifty millions of dollars.

The Spanish fever, communicated by Texas or Gulf coast cattle to those of the country through which they pass in travelling northward, and which has proved so fatal for several years in Texas, Arkansas, Missouri, and Kentucky, has been less destructive than usual the past year, in consequence of the restrictive or prohibitory measures adopted by citizens of the border, yet its ravages have been continued in several counties in Missouri and Kansas, and in Barton, Newton, and Towns counties, Georgia. The loss in a single season has exceeded $200,000 in one sparsely settled county, from this cause. The disease is peculiar—fatal in almost every case; is highly contagious, while the animal communicating the contagion appears to be exempt from disease and improving in flesh; and it yields to no remedies, and is but slightly modified by treatment.

A lung disease, locally characterized as pleuro-pneumonia, has been prevalent in the vicinity of Baltimore, in eastern Pennsylvania, and, to some extent, about Washington and Alexandria.

Abortion in cows has occasioned no inconsiderable loss; more severe in New York and Vermont than elsewhere. Local investigations have been made, as yet without conclusive results.

A disease in Nassau county, Florida, has swept away twelve per centum of the cattle, and in Baker county, in the same State, 2,000 died last spring. In several counties of North Carolina, and in Charlton county, Georgia, an unknown disease has destroyed fifteen per centum.

A great variety of diseases has attacked sheep, destroying not less than a million in number, in addition to a large percentage of lambs lost by exposure or from other causes.

Horses have fallen victims to many named and unknown diseases in all sections of the country. In Gates county, North Carolina, the loss is reported at

twenty per centum from a disease commonly designated "blind staggers," and other portions of the south have been severely afflicted with the same disease.

The mortality among swine exceeds that of any other species of farm stock, involving a loss of not less than fifteen millions of dollars, though the extent of the ravages of hog cholera has been less than in previous years. Not unfrequently from 1,000 to 5,000 hogs are reported to have fallen in a single county. In the Ohio valley and the southern States this disease has been most prevalent. In some localities it has discouraged the raising of this variety of farm animals, and in many pork producing districts it has cut off the entire surplus for shipment, leaving a scanty supply of bacon for local use.

In view of such facts as these, I deem a scientific investigation of the causes and character of these maladies worthy of the early attention of Congress. If remedies may not be found for all of them, the best means of prevention can certainly be pointed out by veterinary science.

I am, very respectfully, yours,

HORACE CAPRON, *Commissioner.*

Hon. ROWLAND E. TROWBRIDGE.
Chairman Committee on Agriculture, House of Representatives.

CONDITION OF FARM STOCK AT THE CLOSE OF WINTER.

The heavy losses and depreciated value of cattle and sheep during the winter of 1866–'7, from insufficient feed, care, and shelter, in those portions of the country where good barns and constant attention are not deemed vital points in stock-growing, have evidently had an influence in the direction of sound economy, true humanity, and good husbandry. It is remarked particularly that greater attention than usual has been given to the care and feeding of the animals of the farm, and the results have been satisfactory and remunerative. The past winter has also been peculiarly favorable to the health and comfort of domestic animals. The season has been long, uniform in temperature, and not excessively cold; and these characteristics have been more general than usual throughout the national area, which includes so many varieties of climate and meteorological conditions. In the eastern and northern States hay was generally abundant; in the Ohio valley, between latitude 38 and 40 degrees, the long and severe drought diminished the supply of feed, so that this region of ordinary superabundance of forage was put for once to a severe test, and in some places an actual scarcity resulted.

The necessity of barns, or efficient shelter of some description, in the entire area west and south of Pennsylvania, demands the immediate and urgent consideration of humane and thrifty farmers. The region of the northern Mississippi and Missouri is far better calculated for grazing and feeding of stock than for growing of cereals. It combines a healthy climate with a deep, fine, rich soil, and a long summer of high temperature, giving rampant growth to vegetation, succulence, bulk, more straw than grain, more grass than seed, a better growth of green than of white crops; and its capabilities are not improved, or its resources utilized, by growing grain and ignoring cattle.

In Wisconsin, Minnesota, Iowa, and to a great extent in more eastern States, the only barns, with few exceptions, are poles or boards forming a skeleton frame, covered with heavy masses of straw from the stacks, from the interior of which nearly all light and air are excluded, and in which horses, cattle, and sheep lie upon their filth, until the whole structure is a mass of rotten straw, mold, and reeking dampness. In some cases these rude shelters are arranged with some regard to cleanliness and healthfulness of stock, but most of them are damp, noisome, and repulsive in the extreme. The business of stock raising will never be sufficiently extended, or properly remunerative, till some attention, some expense, is bestowed upon barns and cattle sheds.

In the south it is a little worse, and only a little, with no barns or shelter whatever. In a good winter, in the lee of fodder stacks, the protection of a forest, or the dryest hummocks of a canebrake, the animal may seek the range in the spring in a medium condition. The attention of southern farmers is called to the urgent necessity for a better provision of forage for horses and cattle. The most disheartening reports of weakness and death from lack of nutrition have been received—in some instances of horses and mules dropping down exhausted in the furrows. The millions lost by such indifference and inefficiency, in the sacrifice of flesh, health, and ability to fatten, are scarcely less than the heavy losses now incurred by actual disease.

The eastern, the western, and northwestern States report, almost without exception, the successful wintering of cattle; a few exceptions are named in New York and Pennsylvania, and a larger number in Ohio. The following local notes include most of the counties reporting unfavorable condition:

Salem, New York.—Poor from long and severe winter.

Niagara, New York.—Fine during the winter, but continued "dry weather and frosty nights are having a bad effect, and they do not look as well as they did."

Onondaga, New York.—Good; attributed to "a better system of housing. A man with any regard to Christianity or his pocket will not allow his cattle to range unprotected in open fields."

Erie, New York.—A little below the average.

Western Maryland—As bad as in 1867.

In Lunenburg, Lee, Albemarle, Gloucester, King William, and Tazewell counties, Virginia, "poor condition" is reported; in Norfolk "never worse."

In Harnett, Bertie, Cumberland, Cabarrus, Franklin, Sampson, Gates, Guilford, Camden, Onslow, Stanly, Caswell, Hertford and Jackson, North Carolina, the condition is placed below the average.

In Lexington and Union districts, South Carolina, "below the average."

In Georgia the counties reporting similarly are Columbia, Chattooga, Charlton, Merriwether, Glynn, Decatur, Tatnall, Johnson and Baker.

Nassau, Florida.—Poor.

Clay, Alabama.—Poor.

In Mississippi, Oktibbeha, Yazoo and Leake, poor.

In Louisiana the parish of Avoyelles returns condition "very bad."

In Texas, Harris, Gillespie, Navarro, Dallas, Victoria, Lavacca, Hindman, Falls, Hunt and Prairie, below an average.

Yell, Arkansas.—Poor but healthy.

In Tennessee unfavorable returns come from Meigs, Bedford, Haywood, Shelby and Davidson.

Henry, Kentucky.—Poor; drought injured winter grasses.

Franklin, Kentucky.—Poorer than usual.

Jefferson, West Virginia.—Poor.

In Ohio the following counties return cattle as "below the average," "rather poor," or "thin:" Seneca, Miami, Jefferson, Butler, Harrison, Fayette, Washington, Madison, Highland, Coshocton, Athens, Hancock, Wayne, Ross, Shelby and Fairfield.

Sanilac, Michigan.—Not so good.

Emmet, Michigan.—Poor.

Waushara, Wisconsin.—Very poor.

Sheep are reported in far better condition than last year. Upon examination of returns of a greater portion of the counties of the several States, the following are the only named exceptions to the rule of general health.

Maine.—Kennebec.

New York.—Chautauque, Washington, Suffolk and Seneca.

Pennsylvania.—Dauphin, Erie, Armstrong, Susquehanna and Huntingdon.
Maryland.—Anne Arundel.
Virginia.—Lee, Gloucester, Madison, Tazewell, Scott, Patrick.
North Carolina.—Harnett, Bertie, Mecklenburg, Guilford, Perquimans, Greene, Hertford, Richland.
South Carolina.—Columbia.
Georgia.—Chattooga, Merriwether, Johnson, Catoosa, Morgan.
Florida.—Levy.
Mississippi.—Yazoo, Amite, Marion, Madison.
Louisiana.—Avoyelles, Plaquemine.
Texas.—Harris, Hays, Navarro, Dallas, Blanco.
Tennessee.—Meigs, Sevier, Shelby, Fayette, Davidson.
Kentucky.—Owsley, Carroll, Boone, Rockcastle, Anderson, Franklin, Henry.
West Virginia.—Jefferson, Wood, Putnam and Lewis.
Ohio.—Holmes, Seneca, Miami, Jefferson, Erie, Butler, Clinton, Geauga, Harrison, Washington, Madison, Highland, Tuscarawas, Coshocton, Athens, Monroe, Hancock, Wayne, Ross, Perry, Shelby, Muskingum, Carroll and Fairfield.
Indiana.—Brown, Jefferson, Pike, Porter, Perry.
Illinois.—Crawford, Cumberland, Iroquois, Lee, Grundy, Pope.
Missouri.—Osage, Carter, Phelps, Clark.
Iowa.—Warren, Kossuth, Montgomery.
Wisconsin.—Columbia.

The following extract illustrates the scarcity in those portions of the west that suffered most from the drought:

Ottawa county, Ohio.—Cattle and sheep have fared alike during the winter, viz: on short rations. The severe drought set in in June last year, which of course affected the hay crop, and continued all through the summer and fall and cut short the pasture and corn crop. The farmers were compelled to feed their horses and cattle at least two months earlier than usual, which was so much taken from a scanty winter store. The winter too has been noted for being continuously cold, and all kinds of stock have needed more feed than usual, but did not get it because their masters did not have it to give; consequently, cattle and sheep will come out of their winter quarters looking worse than usual.

DISEASES OF HORSES.

Less than the usual amount of diseases in horses is reported. The contagious diseases so prevalent during the war have disappeared in a great measure. In Alabama and Tennessee horses and mules have died from "eating bad corn," brought down the river. Glanders is reported in Alleghany and Washington, Maryland; in Nelson and Smythe, Virginia; in Rockcastle, Kentucky; in Oktibbeha, Mississippi; in Avoyelles parish, Louisiana, and in other counties, designated in the following notes. In Gates, North Carolina, a loss of twenty per centum from blind staggers is chronicled, and in Emanuel, Georgia, the same disease has prevailed to an alarming extent. Lung fever has occasioned some loss in Jefferson, Pennsylvania. Inflammation of lungs and bowels have been fatal in Livingston, Michigan.

In Westchester county, New York—

A great number of horses were taken very suddenly with loss of appetite, shivering, swelling in the throat, which generally proved fatal in two or three days. The horse doctors could do nothing for it; some of them considered it a sort of diphtheria. Whatever it was, not one taken with it survived.

In Bucks county, Pennsylvania, there is some complaint of lung fever among horses; in York, glanders, colds, and distemper have caused some fatality.

A few cases of distemper are mentioned in Cecil, Maryland.

In Virginia the legacy of the war, in glanders and other diseases so prevalent in 1865 and 1866, has mainly disappeared, few counties reporting any form of disease. Glanders to some extent is found in Nelson and Smythe; in a small neighborhood in Montgomery several horses have died from jaundice;

"many die" of gleet in Highland; pneumonia has "prevailed to some extent" in Norfolk; "distemper" is reported in King William and in Cecil; an aggravated form of distemper, called "Kentucky distemper," in Craig, has been almost universal, "killing a number of fine animals, and seriously injuring those that remain," and in Middlesex an unknown disease, the symptons of which are not given, has proved fatal to mules and horses.

An epidemic in Perquimans, N. C., and adjoining counties, has been productive of considerable losses among horses; it was described by local surgeons as apoplexy. Our correspondent says of it: "The treatment recommended by Youatt and others has in almost every instance proved inefficient. The only cases which have come to my knowledge as having been successfully treated were those said to have been given calomel, followed with Epsom or Glauber's salts, and the sulphate of quinine in very large doses. I saw none of these, but did see many which were treated by bleeding, (largely,) aloes, (Barbadoes,) as a cathartic, and blisters, with cold applied to the forehead; nine-tenths of these cases proved fatal. I have not received information of this disease having appeared in any other than malarious districts. May it not be influenced by the same causes which produce our ordinary congestive or pernicious fevers? and if so, may not the success said to have been accomplished in the treatment above be owing to the antiperiodic effects of quinine? The actual loss in this county I am not able to arrive at definitely, but feel confident it would reach if not exceed from eight to ten per centum of the horses in the county." Our Onslow reporter says: "Staggers has been quite prevalent and fatal to horses, especially to young horses, and large numbers have died from this awful malady, and a few have died from phrenitis, or inflammation of the brain, produced by over-exertion; staggers is natural to this section, where horses are allowed to run in the pasture; horses that are kept stabled seldom have it. Farcy and glanders have prevailed to some extent and proved very fatal, more particularly the latter. Large numbers of horses, mules, 'government stock' from the corrals, are scattered all over the country, and are dying very fast with the glanders; the country is filled with broken-down 'government stock.'" In Craven horses and mules have died with glanders, and the staggers was also very fatal last fall. The correspondent says: "We have had no staggers in this country since 1855, until last year; during that time we had very little bilious fever, or ague and fever. Bilious attacks among the people and staggers among the horses seem to prevail together, and they may be, and probably are, produced by the same causes. Staggers prevails only in the autumnal months; horses are more subject to it than mules; nineteen-twentieths of all the animals attacked die." In Sampson a disease known as "sleepy staggers" carried off a considerable number in the months of August, September, and October. It is worthy of note that all the disease reported exists in the tide-water counties. Great fatality attended a disease among horses and mules in Camden, which was at first thought to be "sleepy staggers," but afterwards decided to be lung fever. The symptoms were, first, a chill, followed by high fever, with drowsiness, loss of appetite, and death on the fourth day. Some farmers lost all their horses. The fatality was not so great among mules. Treatment for lung fever cured many cases; a similar disease is estimated to have carried off 20 per cent. of the horses of Currituck. Some cases were successfully treated with this prescription, viz: half a pint of gin, quarter of a pound of aloes, half an ounce oil of sassafras, two ounces sweet spirits of nitre, thoroughly mixed, and given as a drench.

In South Carolina two districts, Richland and Abbeville, report cases of glanders; and in Georgetown 15 cases of blind staggers are noticed, 13 proving fatal.

Detailed reports from 40 counties in Georgia represent the health of horses to be unusually good, the only exceptions named being a few cases of glanders in Talbot, and blind staggers in Benton and Crawford.

The only exception to the universal healthfulness of Florida is reported from Manatee, where they sometimes "become *sanded* by feeding where the grass is short, but are easily relieved by physic, if seasonably given."

No unusual diseases of horses are returned from Alabama. The same may be said of Mississippi, except Madison county, where many losses have resulted from sudden attacks resembling colic; the animal swelling rapidly, and standing until he falls dead in a few hours from the attack.

A Texas correspondent says:

About three months ago a disease made its appearance among the cavalry horses at San Antonio and Austin, Texas, which spread among our stocks of horses on the prairies, from which the losses in this and adjacent counties must have been ten per centum, mostly among one and two year olds; it was supposed to be black tongue. The treatment was generally washing their mouths with strong copperas water; some used a weak solution of nitrate of silver.

The correspondent for Craighead county, Arkansas, says:

No unusual disease has prevailed among horses with the exception of buffalo gnats, which have been very troublesome for some three weeks during early spring, frequently causing death by the animal inhaling large quantities. In Drew county an unusual disease prevails.

The following statement comes from Desha:

A disease, vulgarly called "sharbone," prevailed during the summer months of last year, and proved fatal to a large number of horses and mules. The disease is said to have originated in France, some 20 years ago, and was then very fatal; it spread over Europe, with the exception of Ireland. From the best information I can get I am led to believe that at least 250 mules and horses died in this county alone during the past summer from this disease. The animal was attacked in the neck, and the first evidence of it was the appearance of a swelling on each side of the throat, something like wind-galls; the swelling gradually extended back to the shoulders, and then appeared to concentrate in the heart, killing the animal very suddenly. Although many remedies were resorted to, I know of but one case where a cure was effected after the disease had fully developed itself, and the remedy then used was the juice of the roots of the common poison oak vine, extracted by boiling the roots, and continuously applied for two days, externally, as hot as the animal could bear the bath.

From Tennessee the distemper is reported in Montgomery, and a fatal disease has made its appearance there under the name of "twelve-months' glanders," of which the correspondent says: "It is very slow, but very sure."

In Hickman, the "yellow glanders" has prevailed to some extent among horses and mules bought at government sales.

No disease is mentioned by our corps in Louisiana save a few cases of glanders in Carroll parish. "Is there any remedy?" asks the correspondent at that point. None; none whatever.

In Texas, glanders also prevails to some extent in Lamar; distemper, in Nueces; Spanish fever, in Burnet; farcy, in Red River; also a disease, not named, in Bell county.

DISEASES OF CATTLE.

Exemption from epizoötics and all uncommon maladies of cattle is distinctly announced in a large portion of the counties reported; in the northern States exceptions to this rule are comparatively rare. The diseases most fatal are pleuro-pneumonia, Spanish fever, murrain, distemper, abortion, black leg, &c. Starvation in some cases has resulted from the pernicious practice of burning the range, which destroys much of the value of southern vegetation. In Duval county, Florida, a disease vulgarly named "salt sick," supposed to result from eating plants growing near salt water, has been fatal. In Baker, Florida, an unknown disease has destroyed 2,000 cattle during the past year. A disease, the symptons of which are not given, caused the loss of fifteen per centum of the cattle of Charlton county, Georgia. A disease of the gall, affecting milch cows, occasioned some loss in Washington, Tennessee. Murrains and distempers, without defined characterics, are reported from various quarters, particularly in

North Carolina and South Carolina. While in some localities many herds were starving, in Tompkins, New York, "a few died from over-feeding." The Spanish fever has been less severe than for many years past; in Barton, Georgia, twenty cases are reported, a few in Newton and towns, in the same State, and some mortality in Missouri and Kansas. Pleuro-pneumonia is reported from Baltimore, Maryland, and Montgomery, York, and other counties in Pennsylvania.

Pleuro-Pneumonia.—Our correspondent in Hudson, New Jersey, says:

We had the pleuro-pneumonia in our county during the past year, and fortunately kept it in check by a strict quarantine. Thirteen cows died in the herd in which it broke out. Mr. John Boyd, jr., their owner, says he purchased a cow in New York city which introduced the disease into his herd. His cows were fed on grains brought from the breweries during the winter, which in our experience causes them to be more susceptible to the disease than cows fed on hay and roots.

A Maryland correspondent writing from Baltimore county says:

There is a disease prevailing among cattle in and around this county, proving fatal in nine cases out of ten. It is known to be very contagious, and heavy losses have occurred in many localities. The disease is pronounced by many experienced dairymen as "dangerous," and is as much dreaded as the rinderpest, that dreadful scourge of cattle in Europe. The disease has baffled all medical skill, and thus far remedies have proved unavailing; it is probably pleuro-pneumonia, or identical with it. Heavy losses of valuable cows have taken place in a number of stables: a loss of 14 in one stable; in another 20; in another a loss of 35 is reported out of 38; in another a loss of 30 out of 70; in many other stables the losses are in proportion. This same disease prevailed one year ago in this locality, and was then called "lung disease," but it is now universally conceded to be pleuro-pneumonia. The animal when attacked becomes exceedingly sluggish and low-spirited; appears to be not in much pain; refuses food; the secretion of milk ceases from the day the animal is attacked; death follows in from five to ten days—the mortality being almost universal. An animal which is discovered to be affected with the disease should be at once removed from the herd, as the disease spreads rapidly by contact. A bill will probably be presented to the legislature at an early day to prevent this much dreaded disease from spreading to other localities.

Our correspondent from Union district, South Carolina, says:

Last year cattle seemed to be generally affected throughout the county with a disease which attacked them, of all ages and conditions; perhaps nine-tenths of them were attacked, and about one-fifth recovered. The disease was styled distemper, or murrain. The cattle when attacked grew languid, feverish, lost appetite, became very weak, and generally died within ten days from the attack. Those which recovered required several months to regain their usual strength, flesh, and spirits. No remedy was successfully used. To prevent the disease, after two had been attacked, I used salt, slacked lime, and tar freely, and had no other case. I believe the free use of the above twice a week will prevent nearly all the diseases among cattle.

SPANISH FEVER.

Our correspondent in Vernon county, Missouri, sends us the following:

Previous to the year 1867 we had but little protection from our State laws, or, if we had any, these laws were not enforced, and great losses in cattle resulted. This is a new and sparsely settled county, and, consequently, not as wealthy as many others, yet we have lost in one season (1858) in this county over $200,000 worth of cattle by the Spanish fever. This disease has been known in this county since 1853, and has been more or less fatal every year the Spanish cattle have been driven through. Perhaps I cannot better describe the facts concerning this disease than by copying a part of a report made to the Missouri State Board of Agriculture, which reads as follows:

"This disease was first recognized as having been propagated by cattle driven from Texas some 12 or 13 years ago; the disease having been in the county some two seasons previous to its having been traced to the Texas cattle.

"From the first breaking out of this fever it was found to be confined to the large roads or highways running through the county from south to north, and, finally, was centred on the Texas cattle, I believe, in the year 1853, by its being confined to one highway through the county over which these cattle passed that year. On this road the disease was quite fatal, killing about 50 per cent. of all the cattle on the road, and persons living near the watercourses over which the road crossed lost as high as 90 per cent. Captain Freeman Barrows and Peter Colley, the one living at the ford of the Osage river, the other near by, lost 90 per cent.; one of them owning about one hundred head, while the other had consider-

ably above that number. Mr. Collins, living at the ford of Clear creek, south of the above, lost an equal proportion. The disease being in no other part of the county that year satisfied the people, on this road at least, that they had found the true origin, as it had been among the cattle in the county for two summers past. In a season or two after almost every settler of the county was convinced that the Texas cattle in some way communicated this fever to our stock, although a few persons, living secluded from the great highways, were unbelievers, and still remain so. In fact, the way this disease is propagated—the obscurity surrounding it, together with the different opinions of persons familiar with it—gives them, at least, a reasonable excuse for doubting the prevailing belief. Two things are agreed to by all: the symptoms of the fever, and its fatality—the latter being much greater in a warm dry summer than in a cold wet one; the disease always ceasing when the frosts have killed the vegetation.

"The first symptom of the fever, discoverable several days before any appearance of sickness, is a dry cough, noticeable by careful observers. In a few days after this the nose becomes dry and the ears slightly drooping, and more flies will collect than on healthy cattle. At this stage the breath will be found to have lost its sweetness and assumed the sickening feverish smell generally, if not always, found in the Texas cattle, which I can best describe by comparing it to the smell of our slaughter-houses, or constantly crowded stockyards in cities. From this condition in one or two days the fever gains its highest stage, and is found to have disseminated itself over the whole body, the heat being very great; the arteries of the neck are seen to beat in short, heavy throbs, the ears becoming very much lopped, the hinder parts reel in walking, the animal getting up or lying down with difficulty; the breath and exhalations are very disagreeable, the end of the tail usually hollow for two or three inches; the pith in the horn has commenced to decay, if not already decayed; the animal refusing to notice the herd, remaining stupid, if not disturbed, neither seeking food nor water. Some, in this stage, will pass water mixed with blood, and dung naturally, others will pass water of a natural color and not dung at all, or but very little, and that in a dryish lump. In another type of the disease, which will occur perhaps in every eighth or tenth case, after being taken the same way, and having the same symptoms as those described, even to the hollow horns and tail, the animal does not get weak, sluggish, or stupid, but is always to be found on its feet, in a watchful attitude, with head turning to any noise, which, if close by, it rushes towards, even through fences or against trees, the eyes being of a green cast, very glaring and wild; those of the first type have a dead, sleepy, and glazed appearance. Both these classes die, as I have described them, without any change, except that the hair deadens before death and has the appearance of that on a dry hide.

"The drove mentioned as having passed through the county in 1853 was owned by Mr. Richard Burris, of Spring river. They were driven from Texas the fall previous and wintered about 50 miles south of here, near Sarcoxie. In the early part of June, Mr. Burris came into this county with his cattle, apparently healthy, in good order, and no lame ones in the drove, numbering about 450 head. He made a slow passage through the county, grazing on the best grasses near the road unmolested, as no one knew at this time that this species of cattle communicated a disease to ours. Early in July the fever broke out on the road travelled by this drove, lasting until the frost put a stop to it, with the fatality previously mentioned. As the disease this year was in no other locality except where these cattle were driven and grazed, the citizens, after carefully tracing their route through the county, in all its windings, came to the conclusion, for the first time, that this fever was engendered from the Texas cattle. This was fully verified in the next year; and up to the outbreak of the war hundreds of cases occurred to prove that they were not mistaken. No Texas cattle, until this year, (1866,) except two yoke of oxen worked here in the fall of 1865 by Mrs. Box, have passed into or through this county since 1860; neither has there been a case of Spanish fever during this period, or any other fatality among our cattle. Mrs. Box's oxen, so far as could be seen, were healthy, and not lame. The neighbors whose cattle came in contact with these oxen were Mrs. Smalley, Mr. Cothran, and Mr. Packard, each having the Spanish fever among their stock, losing some notwithstanding the lateness of the season. About 3,000 head of Texas cattle passed through this county in the month of June this year, (1866,) and a portion of them reached six or eight miles into Bates or the adjoining county before being turned back by citizens of that county. They returned on the same road previously travelled, making no delay in their passage either way more than was necessary. The disease did not break out for some six weeks after the passage of the droves—many more recovering than usual, and about 40 per cent. dying—extending into Bates county to the point where they were turned back. It proved more fatal on the crossings of watercourses, killing about 70 per cent. In 1858 my stock were exposed to this fever by coming in contact with a drove of Texas cattle. The fever was very bad among them, one or two dying every day through the month of August; they were in daily contact with Mr. Millender's stock, who kept a herder, not suffering them to reach the ground that had been used by the Texas droves, yet he had not a single case of fever. When spoken to about keeping my stock from coming in contact with his, he told me there was no danger of our own cattle diseasing one another. I have since watched many such exposures, and in no case has the fever been propagated. The farmers have each an opinion as to how the disease was propagated to their cattle, some thinking it is through the lame ones, a few of

which will be found in almost every drove coming from Texas. Their feet become worn out and sore from long travel, matter forms between the hoofs and is left on the ground and in the water through which they pass, and, it is contended, this inoculates our cattle by being taken in the stomach or otherwise. Others think it is done by the excrements left by those that are lame or diseased, while some think it is through the slobber or froth which is left on the grass. On one thing they agree, that the fever is communicated in some way, raging until the cold weather puts a stop to it, no remedy appearing to have any effect. From the few cases mentioned, which are selected from many of like nature, I have been led to believe, first, that the disease is conveyed to our cattle by those from Texas; second, that the feeding of a large herd one winter in this climate does not prevent the spread of the infection from them the next season; third, that Texas cattle, in apparent good health, give disease to ours; fourth, that the disease is not contagious from our own cattle to each other; fifth, that killing frost will stop the disease; sixth, that no remedy has been found to cure this fever.

"By a very close observation of this disease among my own and neighbors stock for the last thirteen years, I have generally found, on opening those that had died, but very little blood, and the following results: in those that passed water mixed with blood the kidneys and surrounding parts were entirely decayed, the other parts of the body sound; those that did not dung at all, or but little, with manifolds perfectly dry and partly decayed, while the large stomach would be more or less mortified, other parts healthy; those that appeared to dung and pass water naturally, with a liver more or less decayed, the gall always swelled to its greatest tension, other parts healthy; those that were on their feet in a watchful attitude, the brain was found more or less decayed. This leads me to believe the disease is in the blood, which finally becomes congestive, destroying the parts in a few hours after it becomes seated, and no doubt in many cases could be cured if we knew exactly where it had located itself—blood-letting not being sufficient of itself to check the inflammation. The hollow horn and tail no doubt is caused by the fever destroying the blood in the extremities before it does in the vessels, which it does in a great measure before death. This county has suffered very severely with this disease for a number of years, losing, in the year 1858, cattle estimated to the value of near $200,000. The present law is very defective. First, it only precludes the sick ones from passing through the county, and few men under oath can say that because a steer has an unhealthy smell he is sick; secondly, in order to separate the lame or sick ones, if any, the drovers under the present law are required to impound them in order that the selection may be made, &c. But it is little use to select the sick ones when there is equal danger from those that are apparently well."

The above is as good a description of this plague as can be given until the Congress of the United States or our State legislatures shall be induced to have it more thoroughly examined. That it is nearly related to and can be be classed with the rinderpest of Europe there can be no doubt. It acts here in its mildest form, for this reason: our cattle are confined to no fenced pastures or regular watering places, but have the range of miles of open prairie. Whenever our cattle are confined to a limited range, as those of Mr. Colley and Mr. Barrows, before mentioned, the fatality increases from 50 to 90 per cent. That Congress should take some action in this matter there can be no doubt. Why delay investigation until this disease reaches the States east of the Mississippi, and millions are lost in a season? I have often stated, and still think, that the best thing that can be done in the premises is to open a public highway for the passage of Texas cattle. Drovers would be willing to pay for the use of such a privilege. The public domain in Kansas intervenes between the cattle region of Texas and the nearest point on the North Pacific railroad. Here the highway could and ought to be opened, until the southwest branch of the Pacific railroad might offer a greater convenience. This matter is worthy of investigation by the general government. Great interests are involved both to Missouri and Texas.

The writer is referred to an article in this issue, entitled "We have no rinderpest," which will convince him of his error in classing Spanish fever with that disease. The virus in the former case is communicated to other cattle by animals in apparent health, which may be constantly improving in condition, while the subjects of the infection inevitably sicken and generally die without in turn communicating the disease to others. These facts are as well substantiated in the severest as in the mildest types of the malady. In the rinderpest, on the contrary, the poison is fatal to the animal communicating it and to all others through which it successively passes, with very few exceptions, mitigated very slightly, if at all, in its virulency, by its diffusion through the blood of many healthy subjects. If necessary other points of difference could be shown, but it is very evident that the Spanish fever is very different from the rinderpest, by no means so generally fatal, and only in a limited degree contagious.

Greenwood county, Kansas.—"In September, 1865, large numbers of cattle in my immediate neighborhood died with Spanish fever. I lost 52 per cent. of

my own cattle that were running at home, while three other of my herds which were four or five miles away from the range where the Texas cattle had fed were perfectly healthy. The experience of my neighbors was similar to my own, and the route over which the Texas cattle that communicated the disease were driven could be traced by the carcasses of domestic cattle around the watering and camping places. The disease attacked our domestic cattle from 10 to 20 days from the time they were exposed."

Abortion.—The correspondent of Essex, New Jersey, says of abortion:

I cannot help thinking that when the causes of abortion among cows come to be properly investigated it will be found that keeping a large number of them confined closely together in one house, all breathing the same atmosphere, and that a very impure one, from the disregard of strict cleanliness, which prevails too generally, without proper exercise and without due friction and cleanliness of the skin, has more perhaps to do in inducing the disease than all other causes combined. Still, there must be some remote cause giving rise to this specific form of morbid action, which deserves the closest study and investigation on the part of pathologists and scientific breeders.

DISEASES OF SHEEP.

The losses from disease have been greater among sheep than cattle, due mainly to the want of care and feed, and to some extent, apparently, to constitutional debility induced by injurious practices of fine-wool breeders. Grub in the head, liver rot, scab and foot rot, are too common in all parts of the country. In New York, Ohio, and Texas, disease appears to be more prevalent than elsewhere; in the latter State scab and foot rot producing most of the loss. In Livingston, New York, one-eighth of the total number are estimated to be suffering from the foot rot. The Onondaga correspondent says, with some show of probability, that "where a lazy farmer's flock becomes infected they are sure to have it always, though it can be cured."

In Beaver, Pennsylvania, an unknown disease has caused much loss. One man lost 100 from a flock of 330, partly from grub in the head, but mostly from the malady referred to, the animals falling into a kind of stupor, post-mortem examination showing the intestines lumpy or knotty. The flock was well kept. Another wool grower lost 80 from a flock of 275, and another 200 from a flock of 800, the latter from scab and foot rot, probably intensified by over-crowding in winter.

Our correspondent in Athens, Ohio, represents the losses of sheep as more than a fourth of the entire number. Feed fell short and flocks were turned very early out upon the naked plains, either to obtain a scanty subsistence or to die. In Medina, Ohio, the loss is placed at six or seven per centum, a lower figure than would have resulted but for culling out the poorest for their pelts.

Few reports of losses of lambs are received. One-fourth of the young lambs in Middlesex, Virginia, were lost by inclement weather. In Barry, Michigan, goitre in lambs has been fatal. The reporter for Rockingham, New Hampshire, claims that Southdown lambs are stronger than Merinos, and that fewer have died. The losses of young lambs is very general and often quite severe.

Losses of sheep from disease during the past winter have exceeded those of the previous winter in the following counties:

New Hampshire.—Sullivan.
New York.—Wayne, Seneca.
New Jersey.—Essex.
Pennsylvania.—Mercer, Dauphin, Armstrong, Susquehanna, Butler.
Virginia.—Gloucester, Tazewell, Norfolk.
North Carolina.—Cabarrus, Guilford, Davie, Greene, Caldwell, Hertford.
South Carolina.—Georgetown, Union.
Georgia.—Glynn, Tatnall, Johnson.
Florida.—Nassau, Levy.
Mississippi.—Yazoo, Marion, Hinds.

Texas.—Navarro, Ellis, Hardin, Dallas, Victoria, Lavacca, Blanco, Henderson, Falls.

Tennessee.—Meigs, Knox.

West Virginia.—Putnam.

Kentucky.—Carroll, Fayette, Franklin.

Missouri.—Webster.

Illinois.—Grundy.

Indiana.—Scott, Newton.

Ohio.—Holmes, Seneca, Wayne.

Wisconsin.—Juneau.

Holmes county, Ohio.—"A very fatal disease has prevailed among sheep, resulting in a loss of probably eight to ten per centum in some neighborhoods, and perhaps it would average that through the county, some farmers having lost more than half, and some nearly or quite all their flocks. Some call the disease dropsy. Owing to the extreme drought of last fall and the scarcity of pasture they went into the winter in a thin or poor condition, and were not well prepared to stand the long, severe winter that has not yet closed with us."

DISEASES OF HOGS.

The losses from hog cholera, ordinarily not less than $15,000,000 per annum, and greater probably than the damage by all diseases to any other kind of domestic animals, have been less the past year than for several previous seasons, yet is so destructive as to cause a general despondency among swine breeders; to interrupt the prosperity of the surest corn-growing sections, and increase the cost of living to consumers of ham and bacon. In every direction calls for a remedy are made, but they cannot be satisfactorily met. No remedy is likely to be found, as in the case of rinderpest in the cattle of Europe; but veterinary science, if such a science exists in this country, should do something in devising means of prevention. It is important in its influence upon the health of the human family. It cannot be possible that the flesh of those hogs that partially recover is fit for human food; and yet it goes into consumption in some form. In Franklin, Kentucky, our reporter says that "the sickness of several persons, it is thought, resulted during the winter from eating diseased pork; no death ensued, and no investigation was made." Our correspondent in Cherokee, Georgia, seems to believe—and the reader will doubtless agree with him—that something is the matter with the hogs of that county, when he says that "they can be fattened, but have all through the meat something like fish eggs, full of corruption."

In Winnebago, Illinois, a brain disease, very fatal, is reported; and in a few other localities some other forms of disease are named.

It is impracticable to attempt to give the names of all the counties reporting hog cholera. That some idea may be received of its extent and fatality the worst reports of losses will be given, as follows:

Craig, Virginia.—Fifty per cent.

Patrick, Virginia.—Ten per cent.

Tazewell, Virginia.—Fifteen per cent.

Madison, Virginia.—One farmer lost all—Forty head.

Nelson, Virginia.—Twenty-five per cent.

Chatham, North Carolina.—Twenty per cent. In some localities three-fourths of the stock.

Richland district, South Carolina.—In one section two-thirds of all.

Clark, Georgia.—One-seventh.

Morgan, Georgia.—Fifty per cent.

Calhoun, Alabama.—One-third.

St. Clair, Alabama.—Ten per cent.

Clay, Alabama.—"Very bad."

Attala, Mississippi.—Ten per cent.
Tippah, Mississippi.—Twenty-five per cent.
Marion, Mississippi.—Ten per cent.
Carroll Parish, Louisiana.—Seven and one-half per cent.
Union Parish, Louisiana.—"Slight—1,000 head."
Anderson, Kentucky.—One thousand hogs, without including pigs.
Putnam, West Virginia.—Eight per cent.; not so fatal as formerly.
Wood, West Virginia.—Farmers lost their entire crop of hogs.
Marion, Ohio.—Ten to twenty per cent. of the distillery hogs.
Martin, Indiana.—In some localities one-third.
Wayne, Indiana.—Damage, $5,000.
Rock Island, Illinois.—Ten per cent.
Butler, Missouri.—One-third lost.
St. Francis, Missouri.—Ten per cent.
It is stated in Clark (Missouri) correspondence that some hogs "died from eating grasshoppers," which are very numerous there.

WOOL ON HAND.

The following calculation is based upon the returns of per centage of last year's clip remaining in each county at that date:

Estimated amount of wool unsold April 1, 1868.

States.	Pounds.	States.	Pounds.
Maine	263,389	Louisiana	11,778
New Hampshire	278,176	Texas	310,262
Vermont	1,406,785	Arkansas	23,437
Massachusetts	210,176	Tennessee	46,205
Rhode Island	51,220	West Virginia	236,250
Connecticut	194,895	Kentucky	313,551
New York	3,997,512	Missouri	330,609
New Jersey	38,788	Illinois	957,750
Pennsylvania	1,796,550	Indiana	504,378
Delaware	8,193	Ohio	1,615,108
Maryland	66,129	Michigan	1,480,571
Virginia	131,725	Wisconsin	620,649
North Carolina	71,650	Minnesota	58,053
South Carolina	28,778	Iowa	932,895
Georgia	75,570	Kansas	27,483
Alabama	46,286		
Mississippi	77,184	Total	16,211,985

CONDITION OF WINTER WHEAT.

Rarely are our winters so favorable to fall-sown wheat as that of 1867–'8. Seldom has the temperature been so uniform and the ground so constantly covered with snow; conditions favorable to the vitality and healthfulness of the wheat plant. Almost the only complaint of winter freezing and thawing, and consequent winter-killing, comes from the latitude of Tennessee and southern Kentucky, where comparatively small breadths of wheat are sown.

The New England States, now scarcely considered wheat-growing, are awakening to the necessary importance of the bread supply, and are encouraged to attempt wheat culture more largely by the fine condition of that now in the ground. The steady cold of the long winter was remarkable, extending to the

Connecticut shores of Long Island sound. The covering of snow in Hartford county, of that State, is reported at 15 to 20 inches, completely protecting the winter grain, which is looking better than usual.

The season was equally favorable in the middle States, which report few discouraging facts affecting winter crops. In Livingston county, New York, the sowing was later than usual on account of drought, causing a comparatively puny appearance at the opening of spring; in Erie, the fields had a yellow and unpromising look, without material loss from winter-killing; and in Chautauque there is some complaint of freezing-out and sickly appearance.

Throughout New Jersey, Pennsylvania, and Delaware, there is a general expression of satisfaction with the condition of wheat, and a confident expectation of a fruitful harvest if no casualty intervenes.

In the Ohio valley, and in the northwest, wheat generally looks well. A few exceptions are noted, as in Miami, Ohio, "it is not looking very well;" in Hardin it was somewhat frozen; while the reports from most Ohio counties are quite favorable, as in Ottawa there "never was a favorable winter," in Erie it is "small but promising," and in Van Wert, "March passed without a day detrimental" to the growing crop.

In West Virginia, Putnam and Wood counties report inferior condition from winter-killing; others claim a better stand than for many years.

From Indiana the accounts of the crop are uniformly favorable, "far better than usual," "better than last year;" in some cases better than for many years; while in Miami late sown wheat is thin; the early looks well.

In Kentucky there is much diversity in the appearance, and not a little complaint of winter-killing, as in Anderson, Butler, Henry, Laurel, Scott, and other counties. It is noticed in Livingston that fields with a northern and eastern aspect look better than those lying to the south and west. Many fields in Henry have been ploughed and sown in oats.

In Illinois, and especially in the northwest, the crop is mainly spring wheat, but the fall-sown generally looks well in all that region.

Very little loss from freezing is reported from Missouri; it shared with other States in that latitude the drawback of drought in preventing early sowing; yet in many counties the returns are "never better," "very promising," or equivalent terms.

From Virginia, North Carolina, and Tennessee the condition reported is more variable. More or less winter-killing resulted in the belt between the 36th and 39th degrees of latitude from alternate freezing and thawing, the covering of snow being more general than usual, but not of sufficient depth for protection. A few counties only make the loss severe, and many represent the prospect for harvest unusually good. With every day of fine weather the frozen fields improve in appearance, materially affecting the expectations of their owners.

Further south accounts favor an abundant harvest in proportion to acreage sown.

It is worthy of mention and of careful notice, that in every locality that has suffered from freezing, those fields that were planted with the drill are comparatively unscathed, while the broadcast sowing is in miserable condition; and it is also found that thorough tillage enables the thrifty and well-rooted plant to endure the action of frost, while the carelessly seeded wheat is ruined.

WE HAVE NO RINDERPEST.

Reports are published of rinderpest in Virginia, in Maryland, in Pennsylvania; persons mentioned in connection with the prefix "Dr.," or the affix "V. S.," have assumed that the term "rinderpest" is synonymous with "pleuro-

pneumonia," which has once scourged Massachusetts; and of late the "Spanish fever," communicated by apparently healthy cattle to the stock along the route which they travel, has been characterized by the same name. Even some of the agricultural papers are asking, "Have we the rinderpest?" Were there room for doubt, or occasion for mistake, such assertions would be pardonable; but a total ignorance of the peculiarities of the cattle disease called rinderpest, which was two years ago so destructive in Great Britain, is involved in such statements. We have no "rinderpest," and never has a disease bearing its characteristics been examined and described within the limits of the United States.

It is assumed in these erroneous reports of local cattle maladies that the seat of disease in the "plague" or "rinderpest" is in the lungs, as in pleuro-pneumonia, and also taken for granted that there is no definite information concerning the post-mortem appearance of the internal organs, notwithstanding the existence of the disease in Europe for centuries and the loss of millions of cattle.

The voluminous reports of the commissioners appointed by the British government, after weary months of labor, with the aid of distinguished medical experts, commissioned to experiment and report upon the diagnosis, the general and chemical pathology, the microscopic indications, and the treatment of the disease, show conclusively that this dreaded disease is no more like pleuro-pneumonia than human small-pox is like lung fever.

Of these reports, that of J. Burdon-Sanderson, M.D., fellow of the Royal College of Physicians, makes the disease "an essential or general fever," distinguished in its local manifestations "by an alteration of the superficial structures of the skin and mucous membranes," consisting of minute capillary congestion, of increased and perverted growth of the structural elements, and increased and perverted activity of the secreting glands of the skin and mucous membrane. This characteristic is so marked that Dr. S. thus refers to the earlier diagnostic signs:

> Just as small-pox is distinguished exclusively by its eruption, erysipelas by the inflammation of the skin, diphtheria by the membranous concretion of the fauces, so cattle plague may be discriminated from all other diseases whatsoever by the alterations of the visible mucous membranes generally, and particularly by those of the lips and gums.

Dr. Marcet, F.R.S., also a fellow of the College of Physicians, shows the peculiar changes produced by the disease upon the blood, the bile, the milk, and the muscular tissue, and of the blood says: "The falling off of the water and consequent increase of solids in the blood, establishes an interesting parallel between the cholera and the cattle plague," while the flesh contains more soluble albumen than in health, the urea in the urine is strikingly increased while the temperature of the animal continues rising, the quantity of the milk diminishes rapidly and is of less specific gravity and richer in fatty matters, the bile contains more water and mineral matters than usual and is peculiarly subject to early decomposition.

Dr. Charles Murchison, F.R.C.S., physician to the London Fever Hospital, reporting upon the pathology of the disease and its relation to human diseases, gives, as the chief symptoms, fever with general depression, an apthous condition of the interior of the mouth and nostrils, an eruption of the skin, composed of roseolar patches and sometimes pustules, running from the nostrils and mouth, suppression of milk, constipation followed by diarrhœa, albuminuria, hæmaturia, and finally a condition similar to the "typhoid state" in human maladies; the principal morbid conditions after death, catarrhal inflammation, and even gangrene of the mucous surfaces, unusually dark color of the blood, peculiar odor, and great proneness to decomposition; and declares that it bears no resemblance to typhoid fever in man, and is equally distinct from human typhus, scarlet fever, erysipelas, influenza, and dysentery, while small-pox is the human malady it most resembles, not only in cutaneous eruptions, but in symptoms, anatomical

lesions, clinical history, and etiology. The doctor says emphatically, in the outset, that it is "entirely distinct from the milzbrand, or carbuncular murrain, on the one hand, *and from the epidemic pleuro-pneumonia, or pulmonary murrain*, on the other."

Dr. John Syer Bristowe, F.R.C.P., reporting upon the morbid anatomy of the plague, classes it with diphtheria and small-pox, from the former of which it differs in the character of the exudations on the mucous membranes and in the nature of its cutaneous eruptions, and from the latter in the equality of development of eruptive spots, as well as in their character. He thus disposes of an opinion often loosely ventured in the reports of this disease:

> The disease has been called the "contagious typhus of horned cattle," but there is certainly little in common between the two diseases. No one, in fact, acquainted with their pathology could possibly confound them, or could have dreamt of borrowing the name from one to apply it to the other. It has lately also been assumed to be identical with typhoid or enteric fever. The assumption, however, is even more unfounded than the last, and can only have been made in ignorance of the facts.

Lionel S. Beale, M.B., F.R.S., charged with microscopical researches, after a series of patient investigations with a microscope magnifying 2,500 diameters, considers the "highly congested state of the capillary vessels of many different textures and organs" the most remarkable of the morbid changes observed. He also notes an increased secretion of the surfaces, and that "the masses of germinal matter (usually termed nuclei) of almost all the textures of the body are invariably larger than in health." He then gives a mass of interesting data concerning changes in the vessels and in the blood, the microscopical character of the secretions and discharges, the morbid changes in the tissues, and the nature of the poison or contagium.

These reports are profusely and beautifully illustrated in chromo-lithograph, extended and minute tabular statements of results are given, a multitude of individual cases of disease and treatment, as well as post-mortem examination, are cited in extreme detail, and the whole evidence shows a more radical and exhaustive examination of the disease has been made than ever before was given to it.

Professor John Gamgee, principal of the Albert Veterinary College, London, now in this country, who warned the authorities of the coming of the disease before its appearance in England, and who from the first declared the impolicy of attempting anything but prevention, and urged strenuous measures for "stamping out" the malady at once by the use of the axe and knife, thus characterizes it:

> The cattle plague is not a local disorder; it is not an affection of any special organ or group of organs. It is a systemic disease, a fever, in which the mucous membranes and skin are specially implicated. There are important local and characteristic manifestations, usually most marked in the mouth, fourth stomach and intestines, in the organs of generation, and frequently in the respiratory passages. It is, however, something different, and something more than an inflammation of the breathing, or digestive, or generative systems. The cell growth, fatty and molecular disintegrations, desquamation and discharge of the epithelial and epidermic cells, are typical of this disease. In this way it can only be classified among general diseases, with fevers of a specific kind, and which originate from specific causes, run a definite course, manifest a singular periodicity in their progress, and have a marked tendency to destroy life."

A history of this disease, and a brief digest of the earlier reports of the Royal Commission, may be found in the department Report of Agriculture for 1865. It is to be hoped that local statements, based upon views utterly erroneous and unenlightened, may not continue to disturb the agricultural community.

SPECIAL STATISTICS OF FARM RESOURCES AND PRODUCTS.

Continued.

1. What is the average percentage of increase (or decrease, if cases of decrease exist) in the price of farm lands in your county since 1860?

2. What is the average value of wild or unimproved tracts of land; and what is the character, quality, and capabilities of such land?

3. What marked or peculiar resources have you in soil, timber, or minerals; and what is the state of their development, or inducement for attempted development?

4. What crops, if any, are made a specialty in your county; and what facts illustrating their culture, quantity, and the profit derived?

5. What kinds of wheat are cultivated; and which of them are preferred; and why? What is the time of drilling or sowing? For harvesting? And what is the amount and mode of culture? What proportion is drilled?

6. What grasses are natural to your pastures? How many months can farm animals feed exclusively in pastures? What would be a fair estimate, per head, of the cost of a season's pasturage of an average herd of cattle?

7. What are the capabilities of your county for fruit? What fruits are best adapted to your soil and climate? Give some *facts* concerning yield and profit.

MICHIGAN.

1. Of the counties making returns to our circular but one, Ontonagon, reports a decline in the value of farm lands, depreciation in this case being attributed to the great depression of the copper mining interest. Bay county claims an increase of 300 per cent; Iosco, Alpena, and Gratiot from 200 to 250; Delta, Leelenaw, Cass, Clinton, and Jackson, 100; Kent, 66; Lapeer, Ingham, Barry, Branch, Ottawa, and Muskegon, 50; Berrien, Van Buren, Macomb, St. Joseph, 30 to 40; Alcona, Livingston, Hillsdale, and Kalamazoo, 15 to 25 per cent.; showing an average increase of about 70 per cent. for the State since the estimates of 1860. Mason county has been mostly settled under the homestead laws since 1862, and farm lands have increased from $1 25 to $10 per acre.

2. Wild or unimproved lands are reported at various figures from the government minimum price up to $50 per acre, according to location and condition. In Ontonagon, in the northwest, on Lake Superior, the average value is $6 per acre, heavily timbered with hemlock, maple, birch, and pine, suited to wheat culture, fruits and vegetables. Delta county, $1 25 to $2 50; about one-tenth in hard wood, good soil; the remainder pine, sandy and poor. Leelenaw, government lands, $1 25; held by individuals, $5 per acre; soil a sandy loam. Mason, government land, $1 25 to $2 50; State swamp, $1 25; railroad, about $2 50; the swamp is in cedar, ash, and hemlock timber; when cleared makes good grass land; one-half the county in pine now being cut off, soil poor, light. Muskegon, $8 per acre; soil partly clay loam, remainder sandy. Ottawa, $8 50 on an average, though some fruit lands are selling as high as $50 to $75 per acre. Kent, average value, $15; soil various, some superior wheat land. Van Buren, $16 per acre. Cass, $25 if dry enough for cultivation without draining; wet lands not worth so much; dry lands generally timbered heavily; will produce grass, wheat, corn, potatoes, &c., in perfection, also fruits suited to the latitude. Branch, $10 to $40 per acre, mostly timber. Hillsdale, $10 per acre, generally broken by hills and swamps. Jackson, but small parcels left, worth $25 to $30 per acre. Calhoun, $15 per acre; three-fourths good farming lands when cleared; one fourth swamp, mostly without timber. Kalamazoo, mostly oak openings and beech and maple lands; soil fertile, desirable for wheat and grass. Barry, $10 per acre. Clinton, unimproved farming lands are worth

$9 per acre; quality excellent, gently rolling, half timber and half oak openings; soil varying from light sand to heavy clay; swamp lands of little market value, though they contain inexhaustible stores of peat and marl. Ingham, greater part of the wild land is wet, mostly black muck, highly productive when drained; there are also dry farming tracts, well timbered. Gratiot, $6 per acre, chiefly farm land, very fertile, producing large crops of grain and grass. Macomb, $25 per acre, various qualities, nearly all susceptible of high cultivation. Lapeer, $5 to $20; in the south, oak openings, northern portion heavily timbered; nearly all good farm land. Mackinaw, $1 25 per acre; little farming done in the county. Bay, $7 per acre, well timbered. Iosco, $4 to $15 per acre. Alcona, $1 25 per acre, though holders of pine land reserve it at that price. Alpena, a large portion of the farming lands belong to the government, and can be purchased at $1 25 per acre, while land in second hands commands from $3 to $20, according to quality and location. In several counties all the unimproved and timber lands belong to farms, and are not in the market separately.

3. The geological structure of Michigan varies extremely, the southern peninsula being exclusively secondary in its formation, while the northern peninsula, bordering on Lake Superior, is primitive, but the portions bordering on Lake Michigan and Green bay are secondary. Primitive boulders are found in every part of the State, and there are many evidences of the land having once formed the bottom of the lakes, the waters of which have receded. The rocks of the southern peninsula consist of horizontal strata of limestones, sandstones, and shales, the limestones being generally found in the beds of the rivers near the lakes, and sandstones mostly in the interior. The upper sandstone occupies the central and more elevated portions of the peninsula. The stratum underlying the sandstone is a gray colored limestone. Associated with this rock are found calcareous spar, strontian, barytes, gypsum, &c. In localities where the carboniferous limestone exists, there are indications of the formation of bituminous coal.

The mineral resources of Michigan are chiefly confined to the northern peninsula, the copper and iron regions of which are too widely known to need detailed description here. The great copper deposits are principally located in the Keweenaw peninsula, but the beds extend along the lake from Ontonagon to Schoolcraft in greater or less quantities. The extreme length of the copper beds is said to be 135 miles, with a width varying from one to six miles, though the mineral does not exist in every portion of this extent, miles sometimes intervening with no traces of the ore. The rich deposits of iron ore are found chiefly in Marquette county, where there are literally mountains of this metal. Iron ore is also found in Delta, and to some extent in Berrien and Branch counties. Coal abounds in Jackson, and is found in limited quantity in Ingham, Bay, and other counties, but as yet has been but slightly developed. Gypsum is reported in Van Wert, Iosco, &c.; salt wells in Ingham and Van Wert; clay and lime in Jackson, Alpena, &c. Marl is also abundant in some localities. There is an abundance of timber in great variety in all sections of the State, and in several counties lumbering is an extensive business. In Gratiot county large forces of men are employed every winter in lumbering off the pine, and during the past year 8,000 to 10,000 acres have been cleared up and put in crops or in readiness for seeding in the spring. Large forests of sugar maple exist in this county, and many thousands of pounds of maple sugar are made annually. Our Alcona correspondent says that county "is almost a solid body of pine timber, interspersed with small tracts of farming lands of the best quality, covered with a heavy growth of birch and sugar maple."

4. Wheat, corn, oats, hay, potatoes, hops, &c., are grown generally throughout the State, no county or section being entirely devoted to any particular crop, though wheat is the leading product in many counties, potatoes and hay

in others, while corn, hops, pork, and wool are the money crops in some sections. Wheat and corn are largely grown in Muskegon, Berrien, Kalamazoo, Cass, Barry, Hillsdale, St. Joseph, Livingston, Van Buren, Calhoun, Kent, Gratiot, Macomb, Lapeer, Ingham, Clinton, and other counties; potatoes have been a leading crop in Mason, St. Joseph, Mackinaw, Ontonagon, Delta, Alcona, Alpena, Iosco; hay in Bay, Ontonagon, Delta, Alcona, &c.; hops in Calhoun, Van Buren, Macomb; wool in Livingston, Kent, and Clinton. Our Calhoun reporter writes:

In 1863 this county produced about 860,000 bushels of wheat, averaging nearly 15 bushels per acre, worth in round numbers $1,500,000. D. F. Curtis, living near this city, (Marshall,) harvested 40 acres of Treadwell wheat this year, which yielded 30 bushels to the acre, sold in September at $2 per bushel. It was sown on a clover sod, ploughed early with a three-horse team, thoroughly dragged and cultivated, drilled in. (This is more than double the average of our county.) Another gentleman has several acres in hops; his crop last year was about 1,100 pounds per acre, which sold at 60 cents per pound, yielding a net profit of $300, in addition to the roots sold in the spring, which, at $3 per bushel, produced nearly half as much more. The prices of both the hops and roots were high, rather speculative.

In Clinton last season our reporter says he harvested 168 bushels of wheat on seven acres of clover sod, from which the stumps had not been removed, and that a neighbor raised 500 bushels upon 18 acres; and adds that those who take pains get from 18 to 30 bushels per acre. Ingham averages 12 to 15 bushels of wheat to the acre, netting about $10 per acre. In Gratiot winter wheat on well-worked summer fallow, not molested by the midge, yields 30 to 40 bushels to the acre; spring wheat does as well in favorable seasons. In Hillsdale wheat has become a precarious crop from bad farming, and more attention is given to corn, which seldom fails, and is considered more profitable when fed out on the farm. Farmers in the lumbering regions and counties adjacent find the production of potatoes, hay, and oats the most profitable, always having a ready market for their surplus, and the crops being pretty reliable. In Iosco our reporter says they grow 300 bushels of potatoes to the acre and make a profit of $225 per acre. Our Alpena correspondent says:

Hay is worth $30 per ton, oats $1 per bushel, potatoes $1 50 per bushel. This county purchased and brought here last year, at a cost of $4 per ton, not less than 600 tons of hay, 15,000 bushels of oats, and 5,000 to 6,000 bushels of potatoes. The price paid for clearing lands is $20 to $25 per acre, which land will yield from one to two and a half tons of hay to the acre, from 20 to 50 bushels of oats, and from 100 to 200 bushels of potatoes, with good market at cash prices. Last season I had 15 acres of grass and was offered $20 per acre for it as it stood, and I think this amount can be netted from any fair acre of farming land in this county.

From St. Joseph county we have, "potatoes and peppermint oil are specialties in this county. Of the former not less than 200,000 bushels were shipped from the county last season at an average of 65 cents per bushel to the producer, and of the latter about 7,000 pounds at $4 75 per pound. Those engaged in the culture of these crops are well satisfied with the profits, potatoes being well calculated to subdue the land and leave it in good condition for laying down to grass, while peppermint leaves the land (after yielding three crops to one planting) in fine condition for wheat, our staple crop."

Hop culture is proving largely remunerative wherever engaged in, and the business is annually increasing in the State. Wool has been a prominent production in some sections, but the low prices of the past season have discouraged many farmers, and less attention is being paid to this branch, the returns of the number of sheep in the State January 1, 1868, showing a decline of 80,000 from the year preceding.

5. Of the score or more of varieties of wheat sown in the State we may name the red and white Mediterranean, white Treadwell, Soule, Diehl, midge-proof, Lancaster, amber, blue-stem, flint, California white, and weevil-proof, as among the most prominent. Unlike other States lying in the same latitude, Michigan raises winter wheat principally, the peculiar location of the State, almost entirely

surrounded by water, having much to do with the general exemption of winter grains from the freezing-out to which the crop in other northern States is so frequently subjected. In Berrien the Soule, Treadwell, Tuscany, blue-stem, and California are preferred, yielding from 20 to 40 bushels per acre, under good cultivation; white flint and Soule are the principal varieties sown in Bay, but are pronounced too late to escape the midge; Soule in Van Buren, Gratiot, Muskegon, and Barry; Lancaster in St. Joseph, on account of its general exemption from the attacks of the Hessian fly and the rust, which so often injure later varieties; in Hillsdale, Calhoun, Clinton, Livingston, Jackson, Lapeer, and Oakland, the white Treadwell is quite popular, and in some sections superseding the Soule, being preferred as a sure crop, the plant standing the winter better than other varieties, and doing well even when sown late in the season, and yielding 20 to 30 bushels to the acre. In some counties the preference is given to the white varieties as commanding better prices, but it is generally conceded that the red wheat is the hardiest, and hence the safest crop. Of a very superior variety of wheat grown in New Jersey, and distributed by the Department of Agriculture several years since, our St. Joseph correspondent says: "I have distributed in this and adjoining counties over 150 bushels of a variety raised from a sample received from your department, marked 'White's Bald Mediterranean wheat.' Should it maintain its present standard it will become a general favorite." The Tappahannock wheat is also becoming popular wherever known, for its early ripening qualities as well as for the large yield, and excellent quality of the flour it yields. Our Calhoun correspondent writes that the Amber is sown in greater quantity than any other variety in that county, it being early and hardy, and producing uniform crops and a sound berry, rich in flour-producing qualities. This variety is also preferred in Macomb, as less liable to rust or injury from the midge.

The sowing season extends from the 1st to the 30th of September, though the greater portion is put in from the 5th to the 20th, and harvesting is generally done from the 5th to the 20th of July, though it is sometimes commenced in some counties as early as the 1st of the month, and in others extends into August. Not more than 20 per cent. of the acreage of the State is drilled, and in some counties drilling has not been introduced. In Van Buren, Lapeer, Macomb, St. Joseph, Barry, Livingston, Cass, Jackson, Calhoun, Oakland, Kalamazoo, and a few other counties, the proportion sown broadcast is about one-half on an average. Livingston reports nine-tenths drilled and Cass three-fourths. Summer fallowing for wheat appears to be general. In Branch county our reporter says they usually summer-fallow, plough twice, and drag sufficiently to make the ground mellow. In Calhoun "three-fourths of the crop is grown on fallow, of which two-thirds is sown on clover sod, ploughed once; after cultivation with harrow and cultivator or gang-plough, the rest of the fallow being ploughed twice; one-fourth of the whole crop comes after corn or other spring crop, a moiety being sown in corn without cutting up. This corn is planted five feet apart in squares, cultivated thoroughly and put in with horse cultivator, the corn being husked off the hills about the first of September and the cattle allowed to winter in the field when covered with snow."

Our St. Joseph reporter says that the mode of culture varies among the best farmers, but they generally plough clover sod in June; some then let it lie without ploughing again, but till thoroughly with cultivator and harrow, while others plough again in August. Our Berrien correspondent writes:

> The manner of cultivation varies according to means and circumstances. My method is to plough twice from nine to eleven inches deep with three or four heavy horses, harrow thoroughly, sow from one and one-fourth to two bushels, according to size of grain, cultivate with a nine-tooth cultivator, cross-harrow with a light harrow, then roll with a heavy roller. With this treatment I usually raise heavy crops.

6. The length of season during which farm stock can feed exclusively upon pastures is reported from four to seven months, but one county naming the

former, while in a majority it is given at six to seven months, and at a cost varying from 75 cents to $2 50 per head per month. Blue-joint, June grass, and white clover, are natural to the uplands, and marsh grasses in the lowlands and marshes; while timothy, orchard grass, red-top, and the varieties of clover, are the principal cultivated grasses and which grow successfully. Pastures of clover and timothy run to June grass and blue-joint, and fields left uncultivated soon grow up in these natural grasses. In Macon, Clinton, Alcona, Bay, and other counties, cattle are pastured in the woods or on the commons at comparatively little expense.

7. Fruit culture has attracted considerable attention in Michigan, and the interest appears to be rapidly increasing, and orchards are being planted on quite an extensive scale. The influence of the lake waters surrounding the State is striking throughout the whole extent of the lower peninsula. Peaches are grown to some extent in the central counties, while in the same latitude west of Lake Michigan this fruit is seldom, if ever, brought to perfection without artificial help. This influence is also shown by the almost unfailing crops of apples in Michigan, which in this respect is excelled by no State in the Union. Peach-growing appears to occupy the attention of the people on the lake shore, especially in the St. Joseph district in the southern part of the State, considered one of the best fruit regions of the west. The portions lying within eight or ten miles of the lake offer better advantages than further inland, but the entire valley of the St. Joseph river affords a soil and climate remarkably adapted to nearly all the fruits grown in temperate latitudes. When the peach crop is destroyed in other regions, both north and south, the St. Joseph country is expected to furnish a crop of scarcely diminished excellence and abundance, and the expectation is usually realized. The apple, pear, grape, cherry, and the berry fruits are equally successful, and the production is on the increase, lands suited to their culture commanding high prices. St. Joseph county sent 1,500 barrels of apples to market in 1866, averaging $2 per barrel. In Cass county grapes have succeeded thus far, but require winter protection. The fruit crop of this county was estimated in 1865 to be equal to the wheat crop of the same year. The region around Grand Haven is also well adapted to the grape and peach, a vineyard of about three-fourths of an acre on the shore of Spring lake having yielded in 1865 about $800 worth of fruit, and an equal quantity the succeeding year. For the crop of peaches, on an orchard of 30 acres upon the same lake, $25,000 was refused in 1866. Most of the popular varieties of New York and New England fruits are equally successful in eastern Michigan, but this success is restricted to narrow limits. The eastern, northern, and most western portions of the State, which may be styled the timbered regions, are better adapted to the hardy variety of apples and pears. In the southwestern portions not adjacent to the lake, assimilating in character to the adjoining States of Indiana and Illinois, only the most hardy varieties can be relied upon.

Our Gratiot reporter thinks they can produce in his county "as fine apples as can be found in America; a neighbor weighed 11 Northern Spy apples which aggregated 10 to 11 pounds. Another neighbor had a bed of strawberries, (Wilson's Albany,) 18 by 27 feet, which yielded during five days of the last picking 68 quarts; and an Isabella grape vine, ten years old, produced, as estimated, 10 bushels of grapes." Our Oakland reporter made $900 from 150 apple trees in 1866, besides reserving all he needed for home use, but in 1867 from the same trees he realized less than $100. In Hillsdale 100 apple trees, 12 years old, occupying one and one-fourth acres, averaged 300 bushels of fruit, worth 50 cents per bushel—$120 per acre. A fruit-grower of Coldwater, in Branch county, in 1866, sold $800 worth of apples from a two-acre orchard. The variety was the Northern Spy, and sold at $1 per bushel. Apples are found a very profitable crop in Macomb, some farmers making more from their orchards

than from all the rest of their farming operations. Our reporter says the expense of cultivating and picking is 5 to 10 cents per bushel, the crop selling for 25 to 50 cents per bushel; in 1865, from 50 cents to $1.

WISCONSIN.

1. On the basis of the county returns received from Wisconsin, the average increase of the value of farm lands in the State since 1860 may be estimated at from 45 to 50 per cent., but one county reporting "no advance" since that date. Sauk county, the great hop district, shows the largest increase, our reporter stating that lands averaging $6 per acre in 1860 are now held at $35 per acre, an advance of nearly 500 per cent. Calumet, on the eastern border of Winnebago lake, reports an increase of 150 per cent.; Chippewa and Marathon, in the northern part of the State, La Crosse, in the western, and Green Lake, in the central part, 100 per cent.; Pierce, Trempeleau, 60 per cent.; Clark, Buffalo, Jackson, Washington, Brown, Outagamie, 50 per cent.; Ozaukee, 40 per cent.; Vernon, Lafayette, Rock, Walworth, Fond du Lac, 30 to 35 per cent.; Monroe, Richland, Crawford, Green, Racine, Portage, Columbia, and Marquette, 20 to 25 per cent.; Kenosha, 15 per cent.; Winnebago, 10 per cent., and St. Croix, 5 per cent.; Douglas alone reporting "no change."

2. The value of the wild or unimproved land in the State is variously returned from the several counties, running from 75 cents up to $50 per acre. In Sauk county the average is fixed at $4 50 per acre; mostly broken, stony, and barren, covered with stunted jack oaks, but capable of growing light crops of hops, corn, wheat, potatoes, &c., and in choice selections some of the hardy fruits. Columbia, $8 per acre; but little in the county, quality fair; mostly openings, sandy, with clay subsoil. Marquette, $2 50, chiefly good for pasture. Green Lake, $10; mostly timber-land and marsh. Portage, $2 to $10; embracing all grades, from rich alluvial bottom to high mountain range. Outagamie, $15; soil mostly black loam, with a substratum of stiff red clay, capable of producing all farm crops usually raised in that latitude. Calumet, $20 to $25; forest, hilly; soil very fertile. Door, $3; limestone land. Brown, $1 25 to $50; two general qualities—red clay and black muck; the former retentive of manure but inclined to bake; the latter, when well drained, very productive for ten years without manure. Fond du Lac, $10 to $50, according to capacity for natural hay or burden of timber. Washington, $30; all timber, good soil. Ozaukee, $50; timber. Racine, $16; about 30 per cent. timber; 10 per cent. prairie, and 60 per cent. marsh; the latter containing large quantities of peat. Green, $15; prairie, second-rate quality. La Fayette, $10 to $20; the former for barrens, oak openings or brush lands; much injured by drought and soil soon exhausted. Crawford, $5; rough and broken, good for grazing, wheat, oats, potatoes, &c. Richland, $3 50; rich, black muck, founded on clay and hard pan; deep soil, timber land. Vernon, $3; soil very rich. Monroe, $3; bluff land, good soil, well timbered; valley land, sandy soil; oak and pine timber. Jackson, $2 to $10; on the east side of Black river the soil is sand, sand loam, and extensive pine, tamarac, and cranberry swamps; on the west side, mostly oak land and openings, and small prairies and valleys. Trempeleau, $7; suited to grazing, wheat and corn. Buffalo, $4. Pierce, prairie and oak openings in good locations, $8; hard wood timber, $4, pine, $10. St. Croix, $7; mostly prairie; three-fourths first quality soil; one-twentieth timber. Clark, $3 to $5; hard wood timber; soil good for all small grains. Marathon, $4 for prairie, $10 to $20 for pine land. Chippewa, light prairie $3; heavy soil $5 to $8; timber, hard wood, $3; pine, $5; the county about equally divided between prairie and timber. Douglass, $1 25; within limits of land-grant railroads, $2 50; Wisconsin State lands, 75 cents to $1 25. A number of counties report

no lands under this head, except those included in farms and not in the market as wild lands.

3. Wisconsin possesses abundant timber resources, and an immense lumbering business is carried on in many of the northern and western counties, the pineries of Marathon, Chippewa, Clark, Wood, St. Croix, and other counties, furnishing many millions of feet of logs and lumber annually. Our Clark correspondent claims that 100,000,000 feet of pine timber is cut each year in that county alone; while in Monroe, 30,000,000 feet is annually cut into lumber by about 20 mills. Hard wood timber also abounds in all parts of the State, and there are few counties without sufficient wood for local uses. The lumbering business is a source of great profit to those engaged in it, and in Brown county parties boast of cutting enough white pine logs from 80 acres to net $1,200 to $1,500.

Of minerals, copper is found in Douglass, Chippewa, Richland, La Fayette, Outagamie, and other counties; iron in Chippewa, Jackson, Richland, Fond du Lac, Sauk, &c.; limestone in Richland, Rock, Fond du Lac, Brown; lead and zinc in Grant, Iowa, and La Fayette; marl and peat in Walworth, Racine, and several other localities; marble in Richland, and granite in Fond du Lac. In Douglass there are two veins of copper, as far as known, running through the county, evidently the same description of rock as is found in the upper peninsula of Michigan. There are two mines in operation near Superior. In Outagamie not much has been done in developing minerals, but some few specimens of pure copper, weighing from one to five pounds, have been found. Our La Fayette correspondent writes:

> Our county is rich in minerals. Lead, copper, and zinc abound. The great lead mines of the State are principally within this county, and their development is constant and highly remunerative in most instances. Many individuals engaged in the development of our mineral resources have realized as high as $100,000 in a season.

Peat has been worked to considerable extent in several counties. In Racine efforts have been making the past season to utilize these peat beds for fuel, and with success, as in that locality wood is scarce and correspondingly high. About 500 tons of the former have been manufactured and sold at $5 per ton, wood selling at $7 per cord. There is an abundance of peat in the county.

The agricultural resources of Wisconsin are too well known to require mention here, her rich and generous soil being suited to all the crops of the latitude, and yielding abundantly under the generally indifferent culture to which it has been subject.

4. Wheat, corn, oats, potatoes, and hay are the staple crops of Wisconsin, the first-named being the most extensively grown and by far the heaviest money crop, being made a specialty in a large majority of the counties, though it is not grown to the exclusion of other crops in any locality—as in all the northern States, a variety of crops being cultivated. In La Crosse, Monroe, Richland, Racine, Sauk, and other counties, hops are becoming an important interest, and have thus far proved highly remunerative. The almost universal complaint in reference to the wheat crop is that the yield is gradually decreasing, and as generally attributable to indifferent culture and continuous cropping. Our Walworth correspondent writes:

> I know of but one marked and general peculiarity in the cultivation of crops in this county, and that is the general effort to cheat the soil into producing the greatest possible amount of crop for the least possible amount of labor. The exceptions to this rule are increasing in number, however, as the necessity becomes more apparent. The average yield per acre for the last decade may be safely set down at 14 bushels of wheat; oats, 35; corn, 35; rye, 20; buckwheat, 10; potatoes, 75 bushels. In 1860, wheat averaged over 30 bushels per acre in this county. The greatest amount of profit during the term named has been from wheat, and from corn, oats, rye, and buckwheat in the order named. Beans and potatoes have not been cultivated to any great extent as a market crop, though for the last three years the latter crop has paid well, and its cultivation is increasing.

In Fond du Lac wheat and wool are the chief crops, our correspondent estimating the profit on the former at 50 per cent., and 35 per cent. on the latter; while in Brown wheat and hay rank first, the latter, in the spring of 1867, bringing $25 to $35 per ton. Our Door reporter says:

The most profitable crops are wheat, 25 bushels to the acre; oats, 40 bushels; peas, 40 bushels; potatoes, 130 bushels.

In Calumet wheat and rape-seed are grown as follows:

Winter wheat, 25 bushels per acre; spring wheat, 18 bushels per acre; rape-seed, 17 bushels per acre; the cost of sowing and harvesting the wheat being about the value of five bushels, and of the rape-seed, four bushels.

In Outagamie "the largest yield of winter wheat on new ground is from 45 to 50 bushels—average, 35 to 40; on old ground, 30 to 35 bushels; spring wheat, when well cultivated, 35 bushels; expenses of crop do not exceed $9 per acre, including seed."

In Sauk "hops are made a specialty, growing luxuriantly and yielding most abundantly, averaging three-fourths of a ton per acre, and selling at from 50 to 60 cents per pound. This county alone last season received for the article of hops about $3,000,000—cost of raising, about 22 cents per pound." Our Monroe correspondent estimates the profits upon this crop to be 350 per cent. on outlay of capital and labor. In Richland the profit is given at 150 per cent. Sauk is at present the great hop county, but the vines are being largely cultivated in other localities, and the great success which has attended experiments thus far must stimulate still greater attention to the crop, to which the region seems especially adapted.

The wheat crop of 1866 reached 20,307,920 bushels, or an average of 14½ bushels per acre; corn, 9,414,583 bushels, average per acre, 28.3; oats, 17,174,086 bushels, average, 33 3; potatoes, 3,940,273 bushels, average, 91 bushels; hay, 1,151,477 tons, average, 1.3 ton per acre.

5. The Scotch Fife, Canada Club, Lowland Scotch, California, Rio Grande, China Tea, Hoosac, Blue-stem, Stettin, White Missouri, Soulé, White flint, White and Red Mediterranean, Golden straw, and Siberian, are among the many varieties of spring and winter wheat sown in Wisconsin. The Club and Scotch Fife are preferred in Ozaukee, Rock, Chippewa, Winnebago, Green Lake, Kenosha, Pearce, St. Croix, Columbia, Portage, Buffalo, La Fayette, and other counties; in Rock, Green, Walworth, Monroe, and Washington, the Rio Grande is highly esteemed; the Golden Drop in La Fayette, and the China Tea wheat in Outagamie. The Club wheat is preferred on account of its large yield, while the Fife is valued for its freedom from rust and its stiffer straw. Speaking of the latter our Fond du Lac correspondent says:

It sends its roots deep into the soil; never rusts or falls; stands the extremes of weather, and yields better than either the Rio Grande or Club.

Our Ozaukee reporter writes:

The Canada Club is preferred if it can be put in the ground very early; otherwise the Fife wheat is surer and yields more abundantly, and is therefore more extensively sown, although it commands five or six cents per bushel less than the Club or Golden Drop.

From Racine:

Of spring wheat we have two classes, hard and soft—three varieties of hard, viz: Fife, Lowland Scotch, and California, the last yielding largely but making inferior flour; the other two are hardy, strong-stemmed; yield, satisfactory; flour, good. Of the soft we have seven varieties: Club, Rio Grande, China, Pearl, Mammoth Tea, White Missouri, and Siberian. All make choice flour, but only the Club and Siberian are strong enough in straw to make them desirable.

Comparatively little winter wheat has been grown in Wisconsin, but its success has been so repeatedly demonstrated in various parts of the State that the quantity raised is rapidly increasing. Our Douglass reporter says:

This is a great country for winter wheat, as it has been well tested.

While from Marathon our correspondent writes:

The only reason why farmers do not raise more winter wheat is because they do not know how well our soil and climate are adapted to it.

Of winter wheat the Mediterranean, Blue-stem, White Wabash, and Winter Club are preferred, though the Tappahannock has been received with much favor wherever introduced.

The usual time for sowing spring wheat is from the last week in March to the middle or latter part of April; and for winter, the first of September. Harvesting commences the first or second week in July with winter wheat, and extends to the middle of August with the spring grain. The general mode of culture for spring wheat is to plough in the fall, and early in the spring use the cultivator, then sow the wheat and harrow until the grain is covered. A few farmers roll their wheat soon after sowing, but the custom is dying out as the land becomes older. Our correspondent says that the first, second, and sometimes the third crops on new ground are generally spring wheat; afterwards, each alternate year following, oats or corn. Our Columbia reporter says, "The mode of culture is usually such as to get in the greatest number of acres with the least amount of labor."

6. White clover, blue joint, June grass, pony grass, wild prairie, and wild red-top are named by our reporters as the principal natural grasses; while timothy, red-top, and white and red clover are the chief cultivated grasses. The length of time during which stock can feed upon pastures alone is variously returned from as low as four months up to eight months—the former in Chippewa and Columbia, and the latter in Pearce—the average being under rather than over six months. Cost of pasture per head ranges from 25 cents to $2 00 per month; in a number of counties the expense is but trifling, stock generally grazing in the woods or upon the prairies. This is the case in Portage, Brown, Clark, Chippewa, Douglass, Marathon, Buffalo, Sauk, and other counties. Our Racine reporter says:

Close feeding for two or three years runs the prairie grass out. Indian, or June grass, and white clover follow always. On marshes and river bottoms we have three prominent varieties, viz: blue joint, wild red-top, and a long broad-bladed grass. All make good hay.

7. Wisconsin cannot be considered a fruit-producing State, and a majority of our correspondents report but indifferent success in attempted culture of general varieties. In a number of counties, however, where judgment has been exercised in the selection of varieties, and care taken of the orchards, fruit-growing has proved not only practicable but profitable. From Ozaukee, on the western shore of Lake Michigan, our correspondent writes:

The apple crop does well; pears middling, being subject to blight; plums are often winter killed, and peaches are out of the question. From an experience of over 25 years in fruit raising I can recommend the following varieties of apples for cultivation: Golden Russet, Fameuse, Red Astrachan, Dominie, Northern Spy, (bears late, but does first-rate,) Pomme Grise, Seek-no-further, Rhode Island Greening, St. Lawrence. I lately ordered an assortment of the foregoing for a new orchard of 400 trees. Of pears I cannot recommend any but Flemish Beauty, Sheldon, Dearborn's Seedling, Beurre d'Amanlis, and possibly Belle Lucrative, as standard trees, while the Louise Bon de Jersey and White Doyenne do very well on quince stocks as dwarfs. If any one wishes to cultivate plums, the Golden Drop, Washington and green gage do better than any other kind, if you can keep the curculio out. Apples have never failed me entirely, and I have every year at least a few pears and plums. Apples sell here at an average of $1 to $1 50 per bushel, and pears from $3 to $6.

Hardy apples do well in Washington, and trees 15 years old yield from 16 to 24 bushels of apples, worth $1 per bushel on an average. In Fond du Lac, our correspondent says, "the capabilities for raising fruit are not the best. Apples are best adapted to the climate, but none except the golden russet, salmon sweet, Dutchess de Oldenburgh, and snow apple have as yet proved hardy. Yield for our older orchards about 100 bushels per acre; profits 100 per cent." An apple orchard at Burlington, Racine county, of 250 trees in bearing, produced the past

season 1200 bushels of fruit, which sold at an average price of 88 cents per bushel; two-thirds sold in the orchard. Our Walworth reporter writes:

Apples are fair to good. Orchards under my immediate observation, of 20 years' growth, and well cared for, in good locations, have for the past three years averaged $2 per tree, and if health and enjoyment be estimated, I should double the estimate. This is for improved fruits only, as natural fruits will not exceed half that amount, and have not proved much more hardy.

Rock, La Fayette, Green, Buffalo, Vernon, Monroe, Jackson, and other counties, report that hardy apples succeed with proper care, while in many localities wild, small fruits are found in abundance and the cultivated varieties are grown without difficulty. From Rock our reporter writes:

Capacity for fruit-growing is limited, except for apples of the most hardy varieties and small fruits, such as currants, raspberries, strawberries, &c., which do remarkably well. There are 8 or 10 varieties of apples that do as well here in all respects as in Michigan or the Middle States, and with proper attention to this fact it is hoped that this prairie country will supply its own fruit market. The Red Astrachan, Carolina, Red June, Duchess de Oldenburgh, for summer; Bailey Sweet, Haas apple, Fameuse, and Benoni, for autumn; and Rambo, Tallman Sweet, Golden Russet, Rawles' Jannetting, and Ben Davis for winter, have been thoroughly tested and prove both hardy and uniformly prolific with indifferent protection.

MINNESOTA.

1. Returns from about 25 counties of the more thickly settled portions of this highly prosperous and rapidly advancing State indicate an average increase of at least 100 per cent. in the value of farm lands in the surveyed districts, as compared with the census of 1860. The territory embracing nearly the whole upper half and a portion of the southwestern counties of the State have not yet been surveyed and put in market by the government; are uninhabited or settled only by Indians and traders, and are not of course considered in making up the average increase. No county reports an active decrease in value of farm lands, though Morrison, sparsely settled, and Cass, just coming into market, report no change in price since 1860; and Ramsey, in which the capital is located, and where lands were held very high at that date, reports little if any advance. Brown, Nicollet, and Watonwan claim an increase of 300 per cent., the first-named somewhat higher; Wabashaw, 250 per cent.; Carlton and Carver, 125 to 150 per cent.; Mower, Freeborn, and Faribault, 100 per cent.; Dodge, 70 per cent.; Rice and Washington, 50 per cent.; Houston, Winona, Le Sueur, and Scott, 25 to 33 per cent., and several others ranging from 5 to 25 per cent.

2. Vast quantities of government lands are yet unsold, and may be purchased at the minimum price of $1 25 per acre, or entered as homesteads under acts of Congress making provision therefor. In the counties which have been taken up, however, the wild or unimproved lands are held at higher figures, running from $2 per acre upwards. In Carlton such lands command $3 per acre, loamy, but in small tracts light and sandy; in general fertile, and well adapted to winter wheat, roots, all kinds of grain, (except Indian corn,) also timothy and clover. In Crow Wing $2 50 per acre; Morrison, containing public lands, $1 25 per acre; a portion first-class, others light; generally well timbered; presents rare advantages for settlement under the homestead laws. Monongalia and Wright, $5 per acre; prairie and timber, clay subsoil, soil dark, deep, and rich, capable of producing excellent wheat and small grain. Washington, $8 per acre; the southern half of the county mostly prairie of the best quality; with good cultivation it will produce 40 bushels of wheat to the acre; in the northern part the land is more broken and covered with burr oak; the soil is stiff; produces good crops of wheat and oats, grass, &c. Carver, $8 per acre; timber and meadow; soil good, capable of producing all crops suited to the latitude; several beautiful lakes in the county, affording an abundance of good fish and pure water. Scott; nearly all the unimproved land in this county is either marsh or woodland; the former at this time has but little market value, but its prospective value is great for forage purposes, it being susceptible of easy

and cheap drainage, and thus improved and sown to timothy and red-top grasses would become enduring and first-rate meadows, an important item when stock is kept up half the year; woodlands now command $15, and in the course of a decade of years will average not less than $50 per acre. Rice, $7 per acre, with land similar to that just described, timber and low land. Le Sueur, $6 to $10 per acre; land rolling, deep, sandy soil, capable of producing large crops of wheat, oats, corn, potatoes, &c., for a long series of years without manure. Nicollet, $2 50 to $10 per acre; rolling prairie, friable, black loam, with clay subsoil, will produce wheat and other cereals, &c. In Brown county a portion of the "Sioux reserve" is in the market at $1 25 per acre; rolling prairie, soil a rich, black humus, about two feet thick. Watonwan, $7 50 per acre; black, sandy loam on clay subsoil. Faribault, $3 to $6; rolling prairie; good soil. Mower, $6; level prairie; good rich soil. Freeborn, $3 50 per acre; suitable for farming or grazing. Dodge, $12 per acre; mostly good, dry, tillable prairie; balance (except a small percentage of wet peat land) timber, worth $20 per acre. Wabashaw, $12 50 per acre; rich prairie. Winona, $5 per acre; good for wheat, corn, oats, potatoes, &c. Houston, $7 per acre; soil fertile and productive, especially for wheat. There is a vast area or territory yet unsurveyed within the limits of this State, perhaps one-half of the whole State, embracing a variety of soil, resources, &c., which will be open to settlers as speedily as the demand shall require the government survey.

3. The great resources of Minnesota are to be found in her rich soil and adaptation to successful agriculture, though valuable minerals exist in several counties, and, for a prairie region, the State is well supplied with timber. In the western portion of the State there is a scarcity, but in most of the counties there is a sufficiency of timber to meet the wants of the population, while in some sections it is found in great abundance, and must prove valuable. Cass reports pine timber in quantity, now being developed. Morrison, Le Sueur, Scott, Rice, Dodge, Nicollet, Carlton, Carver, and other counties report an abundance of white, red, and other oaks, elms, bass, butternut, black walnut, poplar, sugar maple, pine, elder, hickory, &c.

Our Carver correspondent says:

> This being a timber county, with market facilities for surplus wood, clearing land is profitable, instead of an expense to the farmer. Wood on the stump is worth from 75 cents to $1 25 per cord. Good wood sells at $4 per cord.

In Scott county their oak timber is utilized for railroad ties, car and wagon stuff, &c.; the several varieties of maple for furniture and sugar-making; the bass-wood for boards and dimension stuff in building; red elm for railroad ties and fencing, and the white elm for bridge and stable plank; the ash for flooring and carriage-making, and an immense number of young hickories are annually cut for hoop-poles.

Carlton county reports some gold, but not enough has been done to test the quality or whether the quartz is rich enough to pay for mining. The reporter further says:

> There is an abundance of superior slate near the St. Louis River Falls, with water privilege, second to none in the United States, close to the quarries. The tract comprising the slate country is about 26 miles long by 6 miles wide. Inducements for the development of lumber and slate will be great when the Mississippi and Lake Superior railroad shall have been built.

In Nicollet there is abundance of iron ore, but not yet developed, owing to lack of capital; iron is also found of good quality in Brown county, but is of little value, owing to the want of wood and coal to work it. Limestone of superior quality is found in Dodge, Rice, Brown, Houston, and other counties. Coal and copper appear in Nicollet; while in Brown county potter's clay of fine quality is found in beds 10 feet thick, from which two potteries are now manufacturing ware which finds ready market.

Our Scott reporter says:

Near Shakopee, our county seat, along the banks of the Minnesota river, and along the Minnesota valley railroad, is an inexhaustible bed of lime-rock, which is largely burned and marketed, chiefly in St. Paul and Minneapolis.

A fine quantity of blue limestone, for building purposes, and an immense bed of peat, are found in Ramsey county, near St. Paul.

4. Wheat is the staple crop of Minnesota, though in most counties a mixed husbandry is practiced—growing wheat, corn, rye, oats, barley, potatoes, &c. This State is emphatically a wheat-growing region, and its fresh lands and deep, rich soil yield large crops, and, with proper cultivation, the average could be kept up and even increased instead of dwindling down to the standard of the older States, as is being witnessed in Minnesota, as well as in other new States.

Our Wabashaw correspondent tells the story in few words:

On new ground the yield per acre was this year 19 bushels; but as the land becomes older the yield decreases, and on some old land the average was not more than 8 bushels per acre. Every man is anxious to raise all he can with the least expense, which is ruining the land.

In Washington county "land is frequently sown to wheat for 10 or 12 years in succession," says our reporter, "then producing 12 to 18 bushels, and when planted to corn produces nearly as much as when new. This season I had wheat on ground for the ninth year, and raised 17½ bushels per acre. Two years ago, the seventh crop was 32½ bushels per acre."

In Freeborn county "the culture is but slight, the wheat being generally sown and harvested carelessly, yet the average yield is good. The crop pays at 75 cents per bushel, considering the cheapness of land and the careless mode of cultivation."

Our Scott reporter says:

The blighting curse of western farming is, that our lands are exhausted by constantly repeating a wheat crop without manure.

In reference to the profits of wheat culture, our Washington county reporter says:

The profit varies with the skill and prudence of the farmer. At present a crop of wheat of 20 bushels to the acre can be raised and marketed for about $14 per acre, as follows: ploughing, $2; seed, 1½ bushel, at $1 50 per bushel, $2 25; sowing and harvesting, $1 25; reaping, binding and shocking, $3 25; stacking, $1 25; threshing, at 15 cents, $3; hauling to market, at 8 cents, $1 60; total, $14 60. Twenty bushels, at $1 50 per bushel, $30, leaves $15 40 for land rent, &c., per acre. Profits often exceed this. In 1865 my profit was $27 10 per acre; in 1866 it was but $14 50.

In Nicollet the average profit on wheat is returned at $10; oats and barley not as much. Le Sueur, from $9 to $12 per acre for wheat; corn about the same. In Carver "lands well cultivated will produce from 20 to 30 bushels per acre. Estimating it at 20 bushels, at $1 25 per bushel, we have $25. From this deduct cost of ploughing and putting in the seed, $3; seed, two bushels, at $1 50 per bushel, $3; harvesting and stacking, $3 50; threshing, $1 60; carting to market, $2 50; total, $13 60; and we have a net profit of $11 40 per acre."

5. Comparatively little winter wheat is sown in Minnesota, on account of its liability to freezing out through the long cold seasons of that latitude, though it is claimed by several of our correspondents that timbered lands, after being cleared, do very well with winter wheat. Of the spring wheat grown, the "Scotch Fife" variety has been the favorite, as the hardiest and surest for that soil and climate, though it is falling in favor in some localities, the "Rio Grande" yielding more and making a better quality of flour, but requiring more care in harvesting than the former, as it is subject to falling out when ripe, and the straw is also more likely to lodge. Canada Club, Black Sea, Golden Chaff, and Circassian are also sown to some extent. In Washington county "the Scotch Fife is preferred, as less likely to rust, and the straw being very stiff, it stands up well. The Canada Club makes the finest flour, but is more liable to rust and smut.

The Black Sea is a good wheat, but if not cut in season it shells badly." In Houston the Fife has deteriorated, and a variety known as the Circassian is proving successful, and is considerably sought after for seed the coming spring. In Scott the Fife is generally grown; "it makes a good stand, yields excellent flour in quality and quantity, and is never injured by smut." Spring wheat is sown during the month of April, though a small proportion is put in rather earlier, and winter varieties during the latter part of August, and first week in September. The harvesting of the former from the middle of July to the latter part of August, generally the first two weeks in August, and of the latter the third and fourth week in July.

As has been stated, the mode of culture is at best indifferent, and if not improved must result in continued deterioration of yield per acre. A large proportion of the acreage is sown broadcast, though several counties report one-eighth, one-fourth, one-half, three-fifths, and three-fourths drilled in. The general practice is to plough the land in the fall and sow broadcast as early in the spring as the frost is out of the ground, the seed being harrowed in. In some cases the ground is harrowed before and after seeding. Little or no manure is applied, the rich soil being considered inexhaustible, the decreasing annual crops failing to remove this fallacy, and the inevitable result will be the gradual diminution of the average yield until farmers appreciate the necessity of better culture.

6. The common prairie grass is the principal natural grass and furnishes the general pasture for stock. This grass when pastured closely gives way to a species called blue-joint. While clover and several varieties of red-top are reported in several counties, while the cultivated pastures are chiefly timothy, red-top, Hungarian grass and clover. Our Rice county correspondent says:

We still almost entirely use the natural grasses. Timothy and clover do well, but it will not pay to cultivate them while we have wild grasses in abundance for both hay and grazing. Native grasses furnish pasturage about five months; timothy, red-top, and clover something over six months.

Carver county:

Blue-joint grass, so called here, grows in abundance in our natural pastures; tame grass does well in the timbered land, but its culture has been neglected on account of the abundance of wild hay. At present cattle run without restraint in the summer, without cost except for care; the land is being rapidly settled, however, and the farmer must very soon provide pasturage for his stock.

In Cass county:

Farm animals feed exclusively six months in the pastures, and in mild winters they will keep in good order on the dried grasses of the meadows and a kind of rush growing in the bottoms. Blue-joint grows in the meadows, and makes excellent hay.

Brown county:

Our pastures are in the prairie, and will be for some years to come, on which we can feed thousands of head of cattle, horses and sheep. Oxen must be fed eight months in the year; other stock from five to six months.

Hungarian grass is cultivated to considerable extent in some localities, and as the country becomes more thickly settled, and the common prairie pastures taken up for cultivation, more attention will necessarily be given to other varieties of foreign grasses. The pasturing season averages about six months in length, and the cost in most of the counties is not more than the expense of salting and herding, though in a few counties from 50 cents to $1 per month is estimated. Our correspondent in Houston county says:

Considerable interest was beginning to be felt in wool-growing, but the decline in the price of wool, and the great losses resulting from lack of proper feeding last winter, have tended to discourage those engaged in this branch of business; yet I do not doubt sheep-raising will ultimately be one of the most common and profitable resources of the farmers of this part of the State. Our soil and climate are well adapted to sheep, and we have greater manufacturing facilities than any other western State; besides, we must keep some kind of stock to keep up the fertility of the soil, and no kind of stock will so well pay for feeding through our long winters as sheep.

Our Scott county reporter, speaking on this subject, says:

Sanguine hopes were entertained a few years since that Minnesota would be able to add another staple product to her industry by the introduction of sheep husbandry, but the rapid and great fall in the price of wool has rendered the enterprise decidedly a failure, and those who embarked in the business are very generally discouraged, I may say disgusted. Sheep cannot be well fed and cared for here at less than $2 a year. The price of wool this season is about 30 cents per pound, and the average clip not more than three pounds of washed wool.

7. The cultivation of fruit has not received much attention as yet, though wild small fruits grow in great abundance, and of excellent quality. Wild strawberries are found in the greatest profusion, also blackberries, whortleberries, raspberries, cranberries, currants, gooseberries, and a wild plum nearly equal to eastern cultivated plums. Large fruits have not done well as a rule where tried, though some of our correspondents report successful experiments in this line. Our Ramsey reporter writes:

No fruits do well here but grapes and small fruits. We have fine vineyard sites along the river bluffs and on our numerous lakes. Some vineyards have been started. No mildew or rot yet, and we think our soil and climate excellent for grapes.

In Rice county they have succeeded in producing all the crab varieties and some of the Russian varieties, viz: the Duchess of Oldenburg, the Fameuse, Perry Russet, &c., but without profit. Many orchards are being set out in Freeborn county, and a few growers are already raising fruit. The Red Astrachan and Duchess of Oldenburg promise well, and all varieties of Siberian crab are said to do well. Thousands of apple trees have failed in Brown county, attributed to some extent to want of judgment in selecting varieties. Our Scott reporter writes:

Attempts to raise the larger fruits in this part of the State have thus far been almost complete failures. I have been largely engaged in the enterprise, having tried 150 varieties of the apple, and so far have found but two or three that withstand the rigors of the climate. All the varieties of the Siberian crab are perfectly hardy here, come early into bearing, and yield bountifully. I have pears now coming into bearing. The varieties of apples I have found hardy on my place are the Duchess of Oldenburg, Golden Russet, and Talman's Sweet.

IOWA.

1. Returns to our circular from a majority of the counties of Iowa, embracing all sections of the State, and furnishing a fair basis for an estimate, show an average increase of about 75 per cent. in the value of farm lands since the census of 1860. Dubuque, Story, Calhoun, Marion, Delaware, Sac, Montgomery, Shelby, Chickasaw, Fayette, and Lucas report an advance of from 10 to 25 per cent. Clarke, Jackson, Des Moines, Decatur, Adams, 25 to 33 per cent. Jefferson, Black Hawk, Muscatine, Cedar, Linn, Clayton, Cherokee, and Wayne, 45 to 50 per cent. Louisa and Jasper, 75 per cent. Warren, Pottawatomie, Allamakee, Appanoose, Benton, Clinton, Palo Alto, and Marshall, 100 per cent. Crawford, Audubon, Jones, Emmett, and Winnebago, 150 per cent. Fremont 250, and Monona as high as 300 per cent. Harrison, Kossuth, Sioux, and other counties report lands "rapidly advancing," without fixing the percentage of increase.

2. Wild or unimproved lands range in price from $1 25 to $25 per acre, the former being the minimum price for public lands remaining unsold. The average value of these lands now in private hands or the property of speculators is probably $6 to $8 per acre. To indicate the general character of these unimproved lands we give extracts from letters of correspondents in different quarters of the State. In Muscatine there are unimproved lands contiguous to the county seat held at $150 to $200 per acre, while in the valley of Cedar river lands can be bought at prime cost, $1 25 per acre. The former is bluff land, covered with a dense growth of young oak and hickory timber, the soil a black loam for about six inches, lying on a subsoil of tough yellow clay, thought to be peculiarly suited to the culture of the grape in particular and nearly all fruits in general. The soil of the bottom land is a black sand, and when it does

not overflow will produce excellent crops of corn. In Clinton the average is fixed at $12 per acre, a large proportion being as good farming land as any in the State, mostly owned by non-residents. Linn county $10, prairie, all good, mostly first-rate wheat and corn land. Dubuque, $10 per acre, quite rolling, mostly covered with hazel brush, and a young growth of red and white oak timber; soil a black loam, with clay subsoil. Allamakee, $7 to $10 per acre, well adapted to the cereal and root crops; the portions too hilly for cultivation being fitted for pastures and vineyards. Chickasaw and Mitchell, $5 per acre, mostly prairie of the best quality for general farming. Winnebago $3, prairie land of good quality, but not convenient to timber, that can be purchased at a reasonable price; will produce good crops of wheat, oats, barley, and potatoes, and fair crops of corn. Kossuth is sparsely settled, and much of the land can be secured under the homestead laws, though in favorable locations land is worth $3 to $5, and rapidly advancing; the greater portion of the county is prairie, with belts of timber along the rivers and creeks. In Emmett and Palo Alto these lands are held at $2 50 to $4 per acre, principally prairie, with scarcity of timber; considerable government land still vacant. In Sioux and Cherokee, $1 25 to $5, prairie, with little timber. Sac $6 per acre, three-fourths of the county unimproved, but as good as any taken up. Calhoun and Crawford $3 per acre, land of best quality; the former contains 300,000 acres of these lands. Audubon $5, prairie, with about ten acres of timber to the quarter section; a rich alluvial soil. Harrison $5 to $10, varying from level bottom to high, rolling prairie; soil first rate, capable of producing 40 to 80 bushels of corn, 15 to 40 bushels of wheat, and other crops in proportion. Cass $2 50 to $10 per acre, prairie, good soil. Adams and Union $4, Montgomery $2 50 to $5, Fremont $2 to $8, Clarke $4 50; good tillable land, some of it of the very best quality; timber scarce. Decatur $5, northern half mostly prairie, the southern half timber; soil good, two to three feet deep, no better land for corn, oats, vegetables, &c. Wayne $3, quality good. Lucas $5; Appanoose $8, rough lands $4 to $5; timber $6 to $20; soil equal to that of lands under cultivation. Jefferson $10, chiefly prairie; some timber; the former consisting of as fine farming lands as can be found in the State. Keokuk $6, good prairie. Marion $7 50 per acre, embracing all qualities of land from best to poorest. Warren $8, light alluvial soil, adapted to growth of cereals. Jasper $8, capable of producing 60 to 100 bushels of corn, or 20 to 40 bushels of wheat to the acre. Marshall $8, good prairie. Story $5, capable of producing 60 bushels of corn, 18 bushels of wheat, or 40 bushels of oats per acre. Hamilton $4, prairie, suited to grain or stock growing. Black Hawk $10 per acre. Benton $5 to $15, prairie, best quality, said to be capable of producing 75 bushels of oats, 40 bushels of wheat, and 100 bushels of corn, when properly cultivated. Des Moines $12, and Louisa $15; quality of soil good.

3. Of the mineral resources of Iowa, coal is the most valuable and abundant, and is said to underlie an area of not less than 20,000 square miles, in all embracing a country equal to two-fifths of the whole State. The Iowa river runs near the eastern boundary of these deposits, which extend southwest into Missouri. It is upwards of 200 miles in the direction of the valley of the Des Moines across the great coal-field while westwardly it extends nearly to the Missouri river. The beds are of immense thickness, in some places said to be 100 feet or more, and lying near the surface are capable of being worked easily and at small expense. This vast bed of mineral wealth has as yet been very slightly developed, though there are inducements for working it to far greater extent than at present. Our Marion county reporter writes:

We probably have more timber land than any other county in the State, and of coal unquestionably more. There is a seven-foot vein of coal underlying nearly the whole of the county; and in the southeastern corner we have veins ten feet thick. The coal in this township will average 350 000 cubic feet to the acre.

The lead mines of the northeast, of which Dubuque is the centre, are continuous of those of Wisconsin, and are being extensively and profitably worked. Zinc occurs in the fissures along with the lead, and copper is also found in this region and along the Cedar river. Iron ore exists in considerable quantities, but is not much worked. Many portions of the State are underlaid with limestone, and building stone of several varieties exists, the Annamosa quarries, of Jones county, ranking among the best in the State. Gypsum also appears in limited quantities, and peat abounds in a number of counties, one bed in Sac county containing over 300 acres, from three to nine feet in thickness.

The great distinguishing feature of Iowa, however, is her vast and diversified prairies, and their characteristic peculiarity, the absence of timber. These natural meadows are covered with a rich coat of wild grass, forming excellent pasturage, and are not infrequently interspersed with hazel thickets and sassafras shrubs, and in the season of flowers are decorated with a brilliant garniture of honeysuckles, jessamines, wild roses and violets. Three-fourths of the county, perhaps, is of this description, yet so happily and conveniently are the streams and timber arranged that nature appears to have made an effort to distribute them in the most desirable commingling. The soil of the State is generally excellent, and probably no State in the Union has a less proportion of inferior land; and her agricultural capabilities may be inferred from the fact that in 1866 she grew one-tenth of the wheat, and about one-sixteenth of the Indian corn produced in the country, being exceeded by but two States, Illinois and Wisconsin, in the former, and four States, Illinois, Indiana, Ohio, and Kentucky, in the latter.

4. Corn, wheat, oats, and hay, are the great staples of Iowa, being grown to a greater or less extent in every county in the State, with the addition of rye, barley, buckwheat, tobacco, &c., in limited quantities. The corn crop of 1866 reached over 52,000,000 of bushels, with an acreage of upwards of 1,600,000, the crop being valued at about $23,000,000, or an average of between $14 and $15 per acre gross. The wheat crop of the same year reached nearly 16,000,000 bushels upon something less than 1,000,000 acres, the crop being estimated at about $22,000,000, or an average of about $22 to the acre, gross product. The wheat crop is the principal market product, other crops being largely worked up at home and sent abroad in more condensed form, as beef, pork, wool, &c. Our Cherokee correspondent says

Rye is not much raised, but is a profitable crop. Potatoes are also productive and much depended upon, and sugar cane is cultivated to some extent.

Hop raising is attracting considerable attention in some counties, and in Jackson and Jones they are reported as successfully and profitably grown; in Sioux they grow wild in abundance, and as large and good as any that are cultivated.

In Jones county several cheese factories have been established the past year, and dairying is becoming a prominent branch.

Our correspondents estimate the net profits of wheat culture at an average of $7 to $10 per acre. Our Sioux reporter says:

We have raised as high as 50 bushels of wheat to the acre; a field of 10 acres yielding 500 bushels of clean merchantable wheat.

Our Monona reporter writes:

Our main dependence is our immense crop of wild grass for pasture and hay used in rearing cattle, horses, and sheep. Corn and oats not unfrequently yield 75 bushels per acre, and in 1866 many fields of wheat all over our county yielded from 40 to 45 bushels per acre. Cattle, horses, and sheep, and all our crops have, for years in succession, commanded high prices.

From Marion our reporter writes as follows:

With many in this county wheat culture is a specialty, while others give much attention to grazing; but corn is king here, and is generally fed to hogs and cattle, and, indeed, to anything that will eat it. This crop is easily produced at the rate of 40 to 50 bushels per acre, and is often so managed as to produce 80 to 120 bushels per acre. I have repeatedly, in this county and in Polk county, had a yield of 110 to 113 bushels to the acre at a cost of

10 cents per bushel; and I have produced 41¼ bushels of May wheat (fall) per acre, at a cost in the bin of 34 cents per bushel, sold at $1 25 per bushel. I have also produced of spring wheat 37½ bushels at 40 cents per bushel, sold at $1 per bushel; of white rye, 35 bushels at 30 cents, sold at 75 cents; oats, 77½ bushels at 9 cents, sold at 25 to 30 cents; beef, at a cost of 2¾ cents per pound sold at six cents gross; pork, at four cents, sold at eight cents; wool at 20 cents, sold at 50 cents per pound; hay, at $2 50 per ton sold at $5 to $10. I have raised horses at $50, when 3½ years old sold at $150. Such is not the rule, however, for the reason that farming is generally done very loosely and unskilfully, and consequently with much less profit than if well and thoroughly done.

Our Jefferson reporter says:

Corn is made a specialty in this county. One man with a good pair of horses and proper implements can cultivate in a moderately good season 40 acres, occupying his time from the 1st of March until the 1st of December, which, at an average of 40 bushels per acre, would yield 1,600 bushels, which, at 60 cents per bushel, would yield $960. Rent of land, $100; wages of man, at $20 per month, $180; board of man, at $1 50 per week, $54; board of team, at $7 per month, $63—total $397; leaving a balance in favor of the crop of $563.

5. But a small proportion of winter wheat grown, the spring varieties generally succeeding better upon the prairies, while the former is chiefly confined to the timber lands, and in most localities not cultivated to any considerable extent. Canada Club, Fife, Rio Grande, Tea, Golden Straw, Goose, Early Robinson, Hedge Row, Mammoth Spring, Black Sea, California, Arnautka, Siberian, Circassian, White Genesee, White and Red Mediterranean, White May, and Red Chaff embrace the varieties generally sown in the State, the preference being given to the Club, Fife, Tea, and Rio Grande in most localities. In Jasper the California and Siberian varieties are preferred, and in Marion the Wild Goose is highly esteemed, and in Winnebago the Golden Straw. Of winter wheat the White May and White and Red Mediterranean are the chief varieties sown.

Drilling wheat appears to be in little favor in Iowa, and is not practiced at all in most counties, the crop being generally sown broadcast from the middle of March to the middle of April, though a small proportion is put in earlier and some as late as the first of May. Winter wheat is sown the latter half of September, and early in October in some localities. The crop is principally gathered during the last two weeks in July, extending into the first week of August, depending much upon the time of sowing. In reference to the mode of cultivation a correspondent writes:

Since reading your scathing, but too true, article in the October number of the monthly report, entitled "Western wheat culture ruinous," I am loath to say anything about wheat; but must plead guilty, *guilty*, GUILTY.

Another correspondent on the western border, says:

Wheat is nearly always sown on corn stubble without removing the stalks, the ground sometimes receiving a shallow ploughing; but more is cultivated with a double shovel or common cultivator; others sow the seed and harrow in. The largest crops of wheat ever raised in Monona county have been cultivated upon the latter plan, many of them yielding 45 bushels to the acre. With all of these plans of seeding the ground is well rolled.

Our Lucas reporter says:

We plough for wheat four or five inches deep, sow broadcast, harrow twice, and then let alone till harvest.

In Jefferson county, "The best mode of culture for spring wheat is to plough the previous fall, and shallow ploughing is preferable; for fall wheat the ground should be ploughed deep in June and reploughed before sowing, that the wheat may take deep root, thus securing it against the drying winds of winter and the frosts of March." Ploughing is generally done in the fall, and sometimes reported in the spring. In 1866 the average yield of wheat per acre in Iowa was 16 bushels.

6. Wild prairie grasses, blue joint, white clover, wild red top, marsh and slough grass, sedge, wild pea or vetch, and buffalo grass are the principal natural grasses of Iowa, while timothy, red clover, red top, and other tame varieties are cultivated with success. Our Jefferson correspondent says;

After prairie grass the varieties most natural to our pastures are blue grass and white clover; they seem indigenous to our soil and climate, and wherever the prairie grass is eaten out they appear without sowing.

In Monona county they have a variety of wild grass called tassel or broad top grass, covering thousands of acres, and yielding five tons of hay to the acre, claimed to be equal to timothy or clover for wintering cattle. In many counties the wild grasses of the prairies furnish the pastures for stock, and animals subsist upon the range during five or six months of the year, at the expense only of herding and salting. Cultivated grasses will generally extend the season during which stock may subsist entirely upon pastures, one to two months, at an expense of from $1 to $2 per head per month. Our Decatur reporter says:

This county excels in timothy and clover; pastures 15 to 20 years old yield from two to two and a half tons of hay to the acre without manure. Cattle can feed on pastures eight months of the year.

In Linn county stock subsist on the prairie grass exclusively six months and timothy seven months, the cost of the former nothing but herding and salt, the latter $1 to $2 per month. In the northwestern they have no cultivated grasses but an abundance of wild grasses of the best quality, upon which farm animals feed seven months of the year, at an expense of about $3 per head for the season.

7. Fruit culture is yet in its infancy in Iowa, and owing to want of judgment in the selection of varieties of the large fruits and the proper care of the young trees, experiments have not been universally successful, yet results have satisfactorily demonstrated that hardy fruits may be grown successfully and profitably in every section of the State. Our Marion reporter writes:

The capabilities of this county for apple and grape culture of the hardy varieties are absolutely unlimited. In common with other parts of the State we produce as fine specimens of Red June, Early Harvest, Sweet June, Summer Sweet, William's Favorite, Red Astrachan, Dyer, Lowell, Belle de Harvest, Golden Sweet, Coles's Quince, Jannetting, White Winter Pearmain, Wine Sap, Fameuse, &c., &c., as I have ever seen in any country. There are parties in this county who have sold thousands of dollars worth of apples the past season at $1 50 per bushel. The Concord is *the* grape for this county for general cultivation, perfectly hardy, very prolific, fruits early, and is as nearly every way right as any thing can well be of its kind—as a grape for the million. The Hartford Prolific, Creveling, a few of Roger's Hybrids, the Delaware, the Diana, the Black Hamburg, &c., are cultivated in the gardens, but the Concord in garden and in field, in quanties. Grapes sell readily at 10 to 15 cents per pound, and there are parties here who have realized $300 per acre for Concords the past season. Pears and cherries are cultivated in a small way; peaches a failure; but small fruits, berries, &c., do well.

Jefferson county reports that locality well adapted to fruit culture, several varieties of apples doing well and making a profitable crop, the trees being planted much closer than in the east or south. Pears also do well, and grapes are a sure and highly remunerative crop; as per the following statement of our reporter: On one acre, 1,300 roots at 10 cents, $130; sub-soiling with plough, $25; planting, $15; trellising, $100; total cost, $270; average yield of each vine, 5 pounds, 6,500 pounds at 10 cents, $650; leaving a profit of $380 for the first crop.

In Jasper many farmers, with orchards planted ten years ago, have plenty of fruit, and are selling their apples at $2 per bushel; grapes sell at 20 to 25 cents per pound. In Mitchell, on the northern border, hardy apples, pears, cherries and plums do well; a few grapes flourish; orchards are yet young; one garden of 30 apple trees, yielded as many bushels as trees; strawberries, raspberries, currants, &c., grow nicely. Keokuk county, one apple orchard of 300 trees, last year produced 1,200 bushels, which sold, in the orchard, at $1 25 per bushel. Marshall, some varieties of apples and pears do well; most orchards not yet in bearing; small fruits and berries yield immensely; one acre of Concord grapes, three years old, yielded $1,000 worth of fruit, at 20 cents per pound; five and one half rods of Wilson strawberries yielded 135 quarts, at 30 cents, $40 50. In Clinton county, an orchard of 300 apple trees, ten years set, in 1866, produced 900 bushels of fruit; sold in the orchard at $1 50 per bushel, in 1867, produced 500 bushels, sold at $1 25 per bushel. The apples

that do well in Jackson, are the Bellflower, Jannetting, Spitzenburg, Tompkins county, Pound-sweet, Black Detroit, Fall Rambo, and Russet.

Mr. Suel Foster, a pomologist, of Muscatine, writes that nearly all the fruits of the latitude, except the peach, succeed well. Apples yield as much as in any country, and the fruit is large, fair and highly colored. He thinks pasturing the orchards with hogs will destroy many of the insects infesting the trees, especially the codling moth. Of grapes he prefers the Concord, for profit, as it will yield seven to eight tons of very perfect fruit to the acre, he having gathered seven tons to the acre the past year, worth in the market from 7 to 10 cents per pound.

Our Des Moines reporter writes as follows:

When I first came here it was voted, unanimously, that this was no fruit country. Itinerants from the east traversed the country and took orders for trees, but with decided loss to the purchasers. After local nurseries were started a decided change was wrought in the minds of the people, and now this county has become famous for fruit growing, and many thousands of dollars are annually realized from the enterprise. As to profits: one of my neighbors has an orchard of about ten acres, and last year he sold from one acre (probably the last) $150 worth of apples.

NEBRASKA.

1. Our returns from Nebraska are chiefly from counties bordering upon or adjacent to the Missouri river, or upon the Kansas border, with a few of the interior counties, and basing an estimate upon the figures from these localities, the settled portions of the State show an increase in the value of farm lands of from 150 to 175 per cent. since 1860. Dodge county reports an advance of 400 per cent.; Burt and Gage, 200 per cent.; Dixon, Dakota, Otoe, 100 per cent.; Cass, Richardson, Pawnee, 50 per cent.; Merrick, 33 per cent. In a number of counties the settlements have been made since 1860, when the farms were bought at $1 25 per acre, or entered under the homestead laws. Such is the case with Jefferson, where there are now farms held as high as $15 per acre. In Hall county, in the interior, farms of 160 acres which could be purchased in 1860 for from $300 to $400, now command from $1,500 to $4,000, according to improvements and distance from railroad stations.

2. The value of wild or unimproved lands ranges from the government minimum price of $1 25 up to $10 per acre. In Dixon, choice locations on prairie, $3 per acre, very fertile, well watered, capabilities good; Dakota, $3 to $7 per acre; Burt, $5 to $6 per acre, excellent farming land; Dodge, $4 per acre; Cass, $3 to $10 per acre; for lands lying 5 to 15 miles from the Missouri river, gently rolling, well watered, and unsurpassed in fertility; but little government land in the county; Otoe, $5 per acre, on the average, mostly prairie, except along the streams, gently undulating, with no abrupt bluffs or hills, except when it takes its first rise from the Missouri river, and with this exception is all capable of cultivation; Richardson, $4 per acre, deep, rich, sandy loam; Pawnee, $2 to $10 per acre, soil black muck or loam, with clay sub-soil, very rich, producing wheat, corn, and oats; Gage, $2 per acre, chiefly prairie, timber lands generally being taken up by settlers; Jones, $2 to $5, mostly prairie, good timber as high as $5 per acre; Merrick, $3 per acre, level prairie, quality good, will produce all kinds of grain and roots; Buffalo, $1 50 per acre; Hall, $2 50 per acre, nearly all level prairie, rather sandy but rich, and produces well all the crops suited to the latitude. There are millions of acres of the best prairie lands in the State to be purchased at government prices, or subject to entry under the provisions of the homestead acts, but a small proportion of the State having been taken up by settlers or speculators. In 1860 there were over 48,000,000 acres of wild or waste areas in Nebraska, against less than 700,000 acres included in farms.

Sorghum has been successfully grown in some sections of the State.

3. The great resources of Nebraska are to be found in her deep rich soil and

agricultural capabilities; timber being comparatively scarce, and minerals not generally abundant, so far as yet developed. The timber is mostly confined to the banks of the streams, and commands high prices, and farmers are wisely engaging in the culture of forest trees for the wants of the future. Our correspondent reports a vast deposit of iron ore in Gage county, of good quality, the vein commencing near the surface of the ground and running very deep. Iron ore is also reported in Dixon and other counties. Coal is found in various sections, but has been but slightly developed. It is found in Richardson at a depth of 20 feet, while in Pawnee it crops out of the bluffs along the ravines. Deposits exist also in Jones, Dixon, Cass, and other counties along the Missouri, worthy of attention. Rock and sandstone, for building purposes, abound in various localities, supplying, to some extent, the want of timber. Limestone is also found in several counties. Our Jefferson reporter says:

We have a mineral white clay here which we think is valuable for pottery. It is used also for paint, and seems to answer every purpose of white lead. We also have a stone-colored clay, peculiar for its toughness and hardness when burned.

4. Wheat, corn, oats and potatoes are the principal crops grown in Nebraska, though various others are successfully cultivated to more limited extent. Our Hall reporter writes that wheat, oats, barley, corn, potatoes and peas are produced in that county, with an average yield as follows: wheat, 25 bushels to the acre, worth $2 per bushel; oats, 50 bushels, at 80 cents; barley, 40 bushels, at $1 25; corn, 40 bushels, at $1; potatoes, 100 bushels, at $2; peas, 30 bushels, at $3 per bushel. As an extraordinary crop he names 45 bushels of wheat, 70 bushels of oats, 45 bushels of barley, 80 bushels of corn, and 250 bushels of potatoes. In Pawnee, Richardson, Otoe, and several other counties Indian corn is made a specialty; in the first named, yielding about 50 bushels to the acre; and in Richardson, from 50 to 75 bushels, never failing, and largely fed to hogs. Wheat is the chief crop in Dakota and Dixon, in the latter yielding about 25 bushels per acre, worth $2 per bushel; profit, 100 per cent. In Dodge county, last season, the crops averaged as follows: corn, 35 bushels, worth 90 cents; oats, 50 to 60 bushels, 55 cents; wheat, 18 bushels, $1 25 to $1 40. In Jefferson they raise as high as 35 bushels of wheat to the acre; corn, from 25 to 60—the former worth $1 25, the latter 60 cents per bushel. Our Cass reporter writes:

Corn, wheat and oats are the staple crops of this county. A man and team, with the improved farm machinery, can easily cultivate seventy acres of corn, wheat and oats, and do it well, with the addition of a little help in harvest time.

Sorghum has been successfully grown in some sections.

5. Canada Club, Rio Grande, Scotch Fife, China Tea, Golden Drop, May, Blue Stem, Mediterranean and Black Sea are the principal kinds of wheat grown in Nebraska, the spring varieties forming a large proportion of the whole crop. The China Tea, Canada Club, Scotch Fife and Rio Grande appear to be equally popular and esteemed for hardiness, yield and value in market, making superior quality of flour. The Fife is given the preference in some localities as less liable to rust and injury from insects, and also for its greater productiveness. Winter wheat is sown in September, and the spring seeding is done from the middle of March to the middle of April; the harvest commences the early part of July and continues up to the first of August. Drilling has been scarcely introduced as yet, but the system is meeting favor, and will soon be more generally adopted. The mode of culture is very simple, and promises to exhaust the land as rapidly as settlers of other new States have been able to accomplish the work, even though the rich soil of Nebraska may now appear almost inexhaustible. The general practice is to plough the ground in the fall, and harrow in the seed in the spring, though better culture is given in many instances. Our Hall reporter writes:

All lands intended for wheat are ploughed in the autumn as early as possible, and well manured, if it can be done. In the spring, as early as the frost is out of the ground, we

sow, harrow twice or three times, according to the condition of the land, and if not too wet roll it once. If the spring is favorable we sow one and one-quarter bushels to the acre; if a very dry season, one and one-half bushels.

6. Common wild prairie grass, blue-joint, buffalo grass, red-top and wild timothy, with some white clover, supply the pastures of Nebraska. Kentucky blue grass and clover do well wherever cultivated, but the prairies are chiefly relied upon for the subsistence of stock during the pasturing season, which is reported to range from five to nine months in length. Otoe reports five months as the season upon which stock can feed exclusively in pastures; Dixon, Dodge, Hall, and Burt, six months; Cass, Gage, and Jefferson, seven months; Richardson, Pawnee, and Jones, eight to nine months; and Merrick runs up to 10 months, our correspondent claiming that stock will live the whole year on pastures in case not much snow falls in winter. The expense of pasturing stock during this season is generally the cost of salt and herding—the highest estimate being $2 50 per head for the season, and the lowest "nothing."

7. There is an abundance of wild small fruits, such as plums, grapes, raspberries, strawberries, gooseberries, &c., but little has yet been done to test the capabilities for large fruits. Our Dixon reporter writes:

This county is not suited to the growth of apples, peaches, or pears, as they get badly winter-killed, and do not grow natural or wild, but plums, gooseberries, currants, cherries, mulberries, raspberries, walnuts, grapes, &c., grow wild and profusely. A family will frequently make 100 gallons of pure wine in a season. I have made 20 gallons for my own use, gathering the grapes in two days. The wine sells at from 50 cents to $2 per gallon. There is no grafted fruit cultivated here; those who have tried the experiment have failed.

Hardy apples may generally be cultivated with proper selections of varieties and care of trees. In Otoe county, according to our correspondent—

Fruits that succeed in the north do well. The hardier apples grow and bear well, while pears are a complete success. Peaches will yield an occasional crop, when the trees are grown in the sod, so as to check the growth of the tree and render it hardy. The small fruits all do well, except the Lawton blackberry and the raspberries, which propagate from suckers, as they badly winter-kill unless thoroughly protected.

Our Dodge reporter says the hardiest fruits must be selected to prove successful, and advises the raising of seedlings, which he finds perfectly hardy.

Hall county:

Capabilities for raising fruit not very good. Apples and pears will not do well; I have tried it for the last 10 years without success, although I claim to understand it. Of 12 varieties of cherries, only one kind (the Early Richmond) did well. Plums do well; also grapes, that is the Concord and Delaware, but no tender varieties.

KANSAS.

1. From the returns at hand we may fairly estimate the advance in price of farm lands in the settled counties of Kansas at not less than 150 per cent. as compared with the census values of 1860, the lowest estimate being 25 per cent. for Nemaha, and the highest 500 per cent. for Marshall, Washington and Saline. Pottawatomie and Butler report 300 per cent. advance; Marion 200 per cent.; Linn, Johnson, Doniphan, Clay, Chase, Osage, and Woodson, 100 per cent.; Jackson and Franklin, 80 to 85 per cent.; Allen, Miami, Wyandotte, and Leavenworth, 40 to 50 per cent. In Linn county the location of the main trunk line railroad from the northern lakes to the Gulf of Mexico, our correspondent says, has advanced the price of lands generally 20 per cent. within the last few months. In Marshall, farm lands purchased at government prices in 1860 now sell at from $5 to $20 per acre, according to the quantity under cultivation, and the real estate value of the county is claimed to be at least five times that of 1860, and the same facts are true of Washington and Saline, the Union Pacific railroad (E. D.) running for 30 miles through the county. Bourbon reports an increase of from $2 to $10 per acre.

2. Unimproved or wild lands are held at figures ranging from the government price for public lands up to $10 per acre. In Bourbon the average is

reported at $3 50 per acre—soil, rich black loam, averaging 2½ feet deep, adapted to the growth of all kinds of grain raised in the northern States. Allen county, $5 per acre, entirely prairie, the timber land being all located and worth $25 per acre. Linn county, $4 to $8 for prairie, $8 to $20 for timber—principally in the western part of the county, and quality up to the average of the country. Miami, $3 to $15 per acre; the prairies are undulating and classed as bottom, second bottom, high prairie and mounds, and are generally susceptible of the highest cultivation. Franklin, $3 per acre; prairie, some of excellent quality, but distant from timber and water; other land stony and bluff, fit only for pasture. Johnson, about $6 per acre, soil mostly a black loam, 15 to 24 inches deep, resting on a yellow clay subsoil. Wyandotte, $10 per acre. Our correspondent says:

This county is located between the Missouri and Kansas rivers, and is the best timbered in the State. The Missouri Pacific railroad and the Union Pacific railroad (E. D.) pass through the county in such a manner that no part of the county is more than ten miles from one of the roads; while the cities of Leavenworth and Kansas City are distant but 15 miles from the centre of the county, giving a good market for everything our farmers may raise, whether grain, vegetables, fruit, or stock. The land is unsurpassed in fertility; about one-half the county is heavily timbered, the remainder prairie. The prairie portion is in the Delaware reserve, and has been recently purchased from them, and is now in the market.

Leavenworth, $6 per acre, generally rolling prairies, belted at regular intervals of one to one and a half mile with oak, walnut, hickory, elm, cottonwood, and pine timber; soil a deep, rich, sandy vegetable mould, capable of yielding enormous crops of corn, pasturage, all the cereals, grass, fruits, &c., suited to the latitude. Jackson, about $5 per acre, very productive, undulated prairie and alluvial creek bottoms; streams skirted with timber. Doniphan, $3 to $15, soil superior, adapted to all small grains, especially for hemp and corn, also for root crops. Nemaha, $4; high, rolling prairie, capable of producing all kinds of grains and fruits suited to that locality. Pottawatomie, $5; sandy loam, adapted to all kinds of grain. Marshall, $5; mostly rolling prairie; splendid wheat land. Washington, $1 25 to $5; black loam, suited to cultivation of corn, wheat, oats, barley, &c. Clay, $3; bottom lands principally suited to cultivation; uplands have a rich soil and in wet seasons are preferable to the bottoms for small grains, but are chiefly used for grazing, affording an abundance of grass and unlimited range—well fitted for stock-raising. Saline, $2 50; common prairie, bottom and upland. Marion, $3; good bottom or table lands, with plenty of water, timber rather scarce, but plenty of good rock, both lime and building stone; lands of first quality. Butler, bottom lands $5; mostly in the hands of settlers; the high or ridge lands are owned by speculators, the old settlers thinking them almost worthless. Chase, $3; valley and upland prairie, clay intermixed with sand and vegetable matter, producing the cereals and root crops without artificial manure. Osage, from $1 up to $20; average $3 50, consisting of timber lands with running water, second bottom or middle lands, second bottom prairie with running or standing water, upland prairie with ravines and buffalo wallow or thin clay lands. Woodson, $2 to $6; minimum price of school lands $3 per acre; rich sandy, rolling prairie, capable of producing two tons of wild grass to the acre, 37½ bushels of oats, and 22 bushels of wheat. There is still a vast area of public lands in Kansas held at government prices, the amount in 1860 reaching 50,265,130 acres, against less than 2,000,000 acres taken up in farms.

3. Coal is found in Bourbon, Allen, Linn, Miami, Franklin, Leavenworth, Jackson, Doniphan, Nemaha, Pottawatomie, Washington, Clay, Osage, Woodson, and other counties, and in some districts in great abundance, though as yet has been but slightly developed. In Bourbon coal underlies the whole extent of the county, the veins varying in thickness from 18 inches to 4 feet, cropping out on the surface in many places, and said to be of the best quality. In Allen

and Linn counties the veins are from 2 to 6 feet thick, awaiting development. Our Osage reporter says :

A seam of coal averaging about 20 inches in thickness extends from the northeast to the southwest corners of our county, about 30 miles, and from 2 to 4 miles in breadth. It crops out in a thousand points, and is worked in at least one hundred places. It is worth $5 per ton delivered at Burlingame.

A similar vein crops out at various points across the county of Woodson. Limestone and several varieties of building stone abound in many counties, supplying a cheap and valuable substitute for timber in fencing and building purposes. In this connection our Miami correspondent writes as follows :

We have excellent stones for fencing and building, and they are so placed in the mounds that they occupy but little space, yet they are upon or near every quarter section, and can be seen at a distance as they project from the top of the mound. These stones are of about the right size and thickness to make a very nice and durable wall or fence, and are easily hauled down hill over the smooth surface of the prairie. These fences, when built of the white and gray limestone and brown sandstone, are in beautiful contrast to the rich dark-green verdure of these lands. I have on my Stonewall farm 1,700 rods of fence, mostly of limestone, built within the past seven years, with my own hands.

Our Leavenworth correspondent says :

We have a soft sand rock which hardens on exposure to the air, very light, porous, and strong enough for building purposes, and makes the dryest house ever built, consequently the warmest in winter, and pre-eminently the healthiest dwelling known. I have tested this rock, and speak of what I know. Very little is yet known of its valuable qualities, but in time they will be appreciated. Fences can be made of rare excellence, and at reasonable prices, that will endure and harden for ages.

Building stone is abundant in Chase, Marshall, Pottawatomie, Osage, Woodson, and various other counties, the varieties found in Woodson being of a beautiful white texture, capable of a fine, smooth polish, and is suitable for tables, mantels, tomb-stones, &c., and so perfectly stratified as not to vary one-fourth of an inch in thickness in blocks 10 by 12 feet square, and these strata range from 2 to 18 inches in thickness. The supply is said to be almost unlimited. In Bourbon a species of black marble abounds, easy of access, and claimed to be equal to the best Italian marble. Lead is found in Linn and Bourbon; salt in Pottawatomie, Miami, Doniphan, Saline, &c.; feldspar in Washington; gypsum in Marshall and Saline. Gold is reported in Pottawatomie, but extent not developed.

There is much superior hard-wood timber in Kansas, but generally there is little more than is required for local uses, while in some counties there is a positive dearth of wood, though in such localities forest trees may be rapidly grown, and their culture is being encouraged by the legislature of the State. Our Allen county correspondent reports the finest quality of black walnut, oak, hickory, hackberry, &c., many of which will make 4,000 feet of inch lumber. Wyandotte claims to be the best timbered county in the State, and under the demand for wood, land selling for $40 per acre is paid for by the wood alone. The bottoms of the Missouri and Kansas valley produce immense quantities of the yellow cottonwood timber for fencing and common building purposes, selling at $15 to $20 per thousand.

4. Corn, wheat, oats, potatoes, and hay are the crops of general cultivation, the first-named being the great staple product—the crops of 1866 being estimated as follows : Corn, 6,527,368 bushels ; wheat, 260,465 bushels ; oats, 200,316 bushels ; potatoes, 243,514 bushels ; buckwheat, 20,402 bushels ; barley, 7,255 bushels ; rye, 4,548 bushels ; hay, 123,082 tons ; tobacco, 22,263 pounds. More attention is being given to wheat, and as the soil and climate are entirely favorable to this culture, there will not long exist so great a disparity between the total amounts of the two leading crops. Corn has been

more largely grown in some sections because readily turned to money by selling at government posts, &c. Our Doniphan reporter says:

Corn, hemp, and potatoes are the principal crops in this county, but wheat, oats, and barley do well. An average corn crop is from 40 to 50 bushels per acre, but frequently 75 to 80 bushels are raised under fair cultivation. Our corn is mostly put into beef and pork, and thus made profitable at present prices.

Another correspondent in this county says:

Corn has this year averaged 60 bushels per acre, and this is about an average year for the crop. A few years since I raised 83½ bushels to the acre and sold the crop for 50 cents per bushel, but this was an extra yield.

In Jackson, stock raising is considered the most profitable branch of farming operations. Our Saline reporter writes:

Corn is the principal crop as yet, because most profitable, there being no good mills for making flour. Our country is better for wheat, rye, oats, and barley.

In Marshall "it is not uncommon for persons here to take wild land and pay for breaking and fencing and the price of the land from the first crop." Hops, castor beans and flaxseed have been successfully cultivated in Johnson county, and our reporter thinks the crops will be trebled the coming season. From Franklin our reporter writes:

Corn, wheat, potatoes, and Hungarian grass are the principal crops. Cotton, of fine texture, was cultivated to some extent during the year. The great detriment to the productiveness of our county is skimming the surface. Deep ploughing is the only remedy against drought. In 1860, the "dry year," I raised 300 bushels of corn. I ploughed my corn as in ordinary years; some persons thought this labor lost. Winter came, and this class of persons had no corn, but received "aid" which the charity of other States sent to Kansas.

Sorghum is a valuable and sure crop, but is not largely cultivated. In Wyandotte and Leavenworth vegetables and fruits are largely grown, and find a ready market.

5. Both spring and winter wheat are cultivated in Kansas, preference being given to each in different localities. The Club, Fife, Rio Grande, Tea, Red and White Mediterranean, Red and White May, Walker, and Blue Stem are the principal varieties sown. Spring varieties are more generally cultivated in Marshall, Saline, Doniphan, Pottawotomie, Nemaha, Clay, and Washington counties, but in several of them the preference for winter wheat is gradually increasing. Mediterranean and May varieties are preferred in Wyandotte, Johnson, Leavenworth, Miami, Franklin, Chase, Woodson, Linn, Jackson, and other counties; the May wheat for its early ripening and freedom from rust and chintz bugs, though it is not so productive as some other kinds; the Mediterranean for its hardiness and productiveness. The Blue Stem is sown in Pottawatomie, the Walker in Allen; while of spring varieties, the Club, Fife, Rio Grande, and Tea are all highly esteemed and successfully cultivated.

Winter wheat is generally sown from the middle of September to the first week in October; spring varieties during the month of March; while the harvest commences the latter part of June and extends to the middle of July for the spring-sown crop. A very small proportion of the acreage is drilled, in many counties none at all, though our reporters anticipate the early adoption of the drilling system. As in all the new States, the culture of wheat in Kansas is upon the principle that the soil is inexhaustible and requires little assistance from the farmer for the production of a full crop. In Marshall they often harrow in wheat without ploughing, upon ground that has been used for corn, and our correspondent says:

If land has been broken in the fall, we harrow in the wheat in March, and get a good crop. If farmers would take more pains, this county would excel in wheat production.

In Clay county the ground is ploughed, sown broadcast, and harrowed, and the harvest awaited. Our Miami reporter writes:

The crop, when sown broadcast and harrowed in, is 15 to 25 bushels to the acre, but we have raised from 20 to 45 bushels by sowing one and a half bushels, and putting it in with double shovel, or with a drill.

In Osage some plough and sow and harrow in, some sow and plough in, and others plough and drill in—rolling generally following. In Woodson "the mode of culture is careless, slovenly ploughing, and equally slovenly dragging over with an A harrow. Drilling is being rapidly adopted in this county, and is believed to pay 30 per cent. in the yield." In Linn the most approved method is to put in seed with cultivator, or drill upon the previous year's corn ground, ploughed in July, though the greater portion is covered with harrow. Our Wyandotte correspondent writes as follows:

We do not as yet pay that attention which we ought to improved farming, yet the yield will average 30 bushels per acre, and the wheat is inferior to none grown in the United States, being of the grade of which the best St. Louis flour is made.

6. In most of the counties the cost of pasturing stock does not exceed the cost of salt and herdsmen, cattle generally subsisting upon the wild grasses of the prairie from 7 to 10 months, and in some localities little feeding is necessary during the whole year; but where foddered during the winter the estimated cost ranges from $3 to $8 only per head. A correspondent writes:

There are no fields kept exclusively for pasture. The nutritious properties of the prairie grasses are manifest in the fall season by our stock cattle being as fat as eastern stall-fed cattle. The cost per head in the summer months is a mere trifle, as cattle herd together and need but occasional salting. In winter we feed prairie hay, Hungarian grass, and fodder, at a cost not exceeding $5 per head, and hundreds are wintered through on much less.

In Allen county thousands of horses and cattle live on the prairies the year round without feed. Our Butler reporter says:

Our prairie grass is of much better quality than that of Illinois or Iowa; our cattle dealers say there is more fat in it. I have been in the county ten years, and never fed three months any winter until the last, when we had to feed until April. Cattle and horses do well on the prairie nine months of the year; the range is unlimited and free, the only expense being for salt and herding. Salt is worth $6 per barrel; one good hand will herd 300 head; wages, $25 per month; board, $12, use of horse, $15; so that herding 300 head costs from $50 to $60 per month.

Buffalo grass, swail grass, red top, Gramma, blue-stem and wild rye abound, the latter furnishing valuable winter range in the timbered lands. The Gramma is regarded one of the best fall and winter grasses for stock. Kentucky blue grass, timothy, clover, and Hungarian grass are cultivated with success, though not very extensively as yet, owing to the abundance of natural grasses. Our Leavenworth correspondent says:

Blue grass lasts all the year round, when snow is not on the ground. Pastures permitted to grow unmolested during the summer yield fine feed in midwinter, and in early spring turn green, and are of surpassing quality in March and April. When the wild pasture is good it is as good as timothy, though timothy hay brings $10 when prairie is $8 per ton.

7. Our reporters in all sections of the State speak favorably and confidently of the capabilities of Kansas in fruit production, though in many counties the orchards are too young to return profits as yet, but are rapidly coming into bearing. All the fruits suited to the latitude are successfully grown. A few extracts from the letters of our reporters will exhibit the capabilities and prospects of the State in this regard. Our Leavenworth correspondent writes as follows:

The cultivation of fruit is very general, though yet in its infancy. Every variety of fruit suited to the latitude has been produced, and of most excellent quality, exceeding in size, beauty, and perfection those grown in New York and New Jersey. Of apples, I have raised on my grounds the finest specimens of fall pippin, rambo, tulpehocken, lady apple, Vandevere pippin, northern spy, Newark pippin, jannetting, summer, fall and winter pearmains, &c., &c., and the yield has been good, and the trees healthy. I have marketed the peaches on two acres of ground at $493 in a single season. Cherries are subject to summer blight, and, except the Kentish red of Pennsylvania and New Jersey, unworthy of further trial. The old Morello cherry is healthy here, but poor in quality. Grapes are a success, and from my limited experience exceedingly profitable, the fruit selling at from 10 to 30 cents per pound. Pears, dwarf especially, are raised of great beauty and flavor. Strawberries and Lawton blackberries also grow to perfection.

Our Jackson reporter says:

The capabilities of our county are most excellent for all fruits raised in this latitude. The grape grows superbly. Our orchards are young, but every man who has an orchard is making it pay; apples and peaches selling at from $1 to $2 per bushel in the orchard, and grapes from 15 to 25 cents per pound.

Woodson county:

There is not an acre of dry land in our county that is not adapted to fruit culture. The peach is peculiarly adapted to our soil and climate, and the crop has not failed since 1860. Grapes do well, and are not subject to the blight or mildew. Apples are only beginning to bear. Pears succeed as far as tried.

Pottawatomie:

The large fruits promise well. Grapes indicate exceedingly fine results. Apples and peaches are worth $2 50 per bushel; grapes, 25 to 35 cents per pound.

Bourbon:

Fruits of all kinds do well. Peaches bear in three years from the seed; apples from six to seven years.

Peaches are sometimes winter-killed, but seldom prove entire failures. Our Miami reporter says they are saved from early frosts by winter mulching. Our Wyandotte correspondent thinks there is no better fruit region in the United States than in that county. He reports an orchard that has not failed in six years to yield an abundant crop; the apples selling in the orchard at $1 25 per bushel, and yielding from $700 to $900 each year. "All the grapes tried succeed, except the Catawba. In Franklin, the Catawba and Isabella have been blighted in many localities during the past three years, but the Concord and Clinton do well." In Osage, "apples do well, and grow large and luscious, but need a wind-break; while peaches do well one year in five; grapes succeed finely, as do all small fruits, except currants, which need shade."

Our Marshall reporter writes:

But little attention has been paid to fruit culture here, but it is believed that all the hardy fruits will do well. If some one would come and start a nursery here in the Blue valley he would have many customers. Nothing of the kind exists in all this valley.

ARE OUR WINTERS BECOMING COLDER?

People are proverbially forgetful of facts in weather experience. It is intimated in public prints that the winters of central United States are gradually becoming colder, and a possibility of an approaching cycle of Arctic cold is hinted. That the public fear of such a climatic misfortune may not become intensified, the following facts from Niles's Register are given:

The Charlestown, Virginia Free Press, of the 8th of January, 1835, says, that on the 5th of that month everything in a fluid or damp state about the office became congealed; that water poured on the form was instantly converted into a cake of ice, and the paper which was worked off on one side had the appearance of a huge block of timber.

A couple of gentlemen belonging to the city of New York went from Jersey City on skates down to Bergen Point, through the kills across the bay to Newark, which was accomplished in four hours.

The Chesapeake bay was frozen over at the Capes of Virginia in February last.

During the cold weather in January the children at Bordentown and Camden, New Jersey, sold hot bricks to the passengers on the railroad at sixpence each.

The thermometer at Charleston, South Carolina, in an exposed situation, on the 8th February, at daybreak, was at zero, an intensity of cold without example in the memory of man, or as far as the thermometrical records of that city reach. Fluids of almost every kind became congealed into solid substances.

The ice on the Mississippi, at Bowling Green, on the 8th February, was strong enough for foot passengers to cross on, and the following day horses and teams crossed in safety.

In 1641 Governor Winthrop, in his journal, mentions that the frost was so great that the Boston bay was frozen over from the 18th November to the 21st December, so that horses and carts crossed over parts where ships had sailed. Loads of wood drawn by six oxen passed

from Muddy river to Boston. It was frozen as far out to sea as one could discern. The great bay at Virginia was also frozen over, and all their great rivers.

In 1779, December, a correspondent of the National Intelligencer, resident in Virginia, says, Colonel Baylor's regiment of horse crossed the Potomac river at Georgetown upon the ice on their march to the Carolinas.

In 1780, January 14, the cold was so intense that the mercury sunk into the bulbs of the thermometers. That winter the gentleman thinks was 40 degrees colder than this. The ice upon James river was 38 inches thick, and the Chesapeake bay was so completely bridged with ice that many persons crossed over upon it from Annapolis to Kent island. A person who had the traditions from his parents assures us that loaded wagons passed over the bay at the points designated. An old revolutionary officer, who resides near the correspondent of the Intelligencer, states, that on the 7th March, 1780, he rode from Falmouth to Fredericksburg, Virginia, upon the ice of the Rappahannock river, in company with his regiment, which was returning to Virginia from the north.

The cold weather continued without intermission from the 10th of December, 1779, to the 9th of March, 1780.

In 1797, January 8, Governor Sargeant, of Ohio, says that the thermometer stood 18 degrees below zero.

In 1819, January 20, the mercury in a thermometer at Norfolk, kept by Mr. W. G. Lyford, in the sun was at 101 degrees.

In 1821, January 26, the river from Norfolk to Portsmouth, and down to the bight of Craney island, was completely frozen.

In 1822, January 25, the thermometer stood at 14 degrees.

In 1827, January 21, the river was frozen across from Norfolk to Portsmouth, and on the succeeding day from Lambert's Point to Craney island.

The past winter has been severe in Europe, but the cold has by no means been unprecedented, as will be seen by the following:

In 1133 the Po was frozen from Cremona to the sea.

In 1234 loaded carts and wagons crossed the Adriatic in front of Venice.

In 1305 all the rivers of France were frozen over.

In 1324 it was possible to travel from Denmark, Lubec, and Dantzic, on the ice.

In 1334 all the rivers in Provence and Italy were frozen. At Paris the frost lasted two months and 20 days.

A. D. 1433 frost commenced at Paris the last of December and continued during three months, less nine days; recommenced towards the end of March and continued until the 17th of April. The same year it snowed in Holland 40 consecutive days.

A. D. 1460 the Danube and the Rhine frozen.

In 1468 wine was reduced to ice in France and cut with an axe. In 1544 a similar severity of cold occurred, and a similar operation became necessary in France.

A. D. 1493 the port of Genoa frozen.

A. D. 1507 the port of Marseilles frozen in all its extent. Three feet of snow fell at the same city on the day of Epiphany.

A. D. 1568 from the 11th to the 21st of December, the Rhone was passed on the ice.

The winter of 1570–'71, from the end of November to the end of February, was so severe that all the rivers, even those of Languedoc and Provence, were so completely frozen that they were passed with loaded carriages.

A. D. 1709 (perhaps the most intense season which has ever occurred within the range of history) the Adriatic sea, and the Mediterranean, from Genoa by Marseilles to Cette, frozen. All the rivers and narrow seas of Europe frozen.

FACTS FROM VARIOUS SOURCES.

Fruit Culture in Florida.—The following extracts are from a letter relative to the culture of lemons and other fruits of Florida, from Manatee county, Florida:

The lemons have a rough, thick skin when first pulled, but allowed to wilt in a cool, airy loft, the skin becomes thin and soft, and the lemon is full of fine sour juice. In the wilted state I think the limes and lemons would bear shipping much better than when just pulled, but we have no direct communication with the northern cities, and thus far find no sale for lemons or limes. If, therefore, we can find some use for the expressed juice, it will be of great service to this region, for the lemon and lime both thrive well on pine lands, bear at an earlier age than the orange, and that on lands that will not produce the orange to any advantage. The guava also does well on poor land in this region and all south of this—

grows fast and bears in three years. Very nice jelly and marmalade are made from the guava grown here. I am but just beginning to plant bananas; have had a few for several years, and fully tested their good qualities, and have now some 2,000 plants, mostly young. The winters are rather severe here, but the fruit matures well and bids fair to become the most profitable that can be raised in this region. It requires a rich and slightly moist soil, gives fruit from the sucker or sprout in 12 to 18 months, and when well attended yields from one to five or six bunches on every five feet square, the large bunches frequently selling as high as two dollars.

The most successful manuring thus far tried here, for the banana, corn, cane, &c., is animal matter combined with lime and covered with muck, marsh mud, or even soil, to absorb the ammonia set free by the lime. The scrapings of a few hides thrown around a clump of bananas have excited no little admiration. But the most available manure in this region is the fish. I have taken some pains to get the offal from the fisheries, and mixing this with lime and covering with muck, have brought out fine corn, sugar cane, cabbage, &c., on lands by nature very poor. This should be more generally known. Fish are very abundant on the Florida coasts, and should be made more profitable than hitherto. Thus far the mullet have been taken late in the season, cured with a large amount of salt, drypacked, heads, back bones, scales and all, and in truth neither fit for man nor beast; whereas, taken in season, neatly cleaned, and packed in kits, half-barrels, &c., they would be accounted a treat on the tables of the better sort. The offal thus left, heads, entrails, and back-bone, packed in lime and muck, would pay well at $5 per ton, and at that the poor land along our coast become the most productive and profitable in the whole country. I combine lime with the offal, to make the manure more permanent as well as to keep it from hogs and buzzards, and cover with marsh mud to save the ammonia. A shark is now and then thrown in with the offal, and the carcass, after the liver is taken out for the oil, still yields a large amount of ammonia. The oil from the fish heads, and sometimes fifteen or twenty gallons from a single shark's liver, will more than pay for the expense of taking the fish.

Drying Sweet Potatoes.—The extreme difficulty of keeping sweet potatoes in good condition, especially in the markets and storehouses of cities, exposed to constant changes of heat and moisture, is fully appreciated by housekeepers and dealers in vegetables. The wonderful productiveness of this esculent in the south, and its great value as a cheap, nutritious, and favorite food of all classes, has often suggested the wish that it might be more available as a food product. Dr. C. K. Marshall, in the Vicksburg Times of September 4th, 1867, asked:

Cannot sweet potatoes, which our soil and climate are so wonderfully adapted to produce, be cut up into slices and so dried that they might be made an article of merchandise? Fruits and vegetables have been dried and prepared for shipment, and thus become valuable crops. If sweet potatoes can be treated so as to preserve the saccharine matter, and become an article of food, even though not as agreeable as the undried root in its best condition, they would pay as handsomely as any product of the southern soil.

This inquiry has been answered by Francis H. Smith, of Baltimore, who has dried sweet potatoes successfully in his drying tunnel, which is a chamber of lath and plaster twenty feet long and six feet in depth and breadth, with a peculiar furnace at one end, a chimney of boards at the other, capable of preparing twenty-five bushels of dried peaches. Mr. S. makes the following statement of his mode of procedure:

They are pealed by a little machine, and sliced three-eighths of an inch thick by another, with great rapidity. When dried, they have lost two-thirds of their weight, weighing twenty pounds; are white, and so flinty that the knife makes but little impression; but when cooked—steaming is the best—they resume their original appearance, and are in every respect equal to the undried root in its best condition.

Specimens of this dried potato may be seen in the museum of the Agricultural Department. It is easily cooked, quite palatable, and if it should become popular would prove of great utility and economical and agricultural value.

Farming in California.—The following is an extract from a letter of John R. Kennedy, recently of this city, to Commissioner Capron, in which the farm of Hon. John Bidwell, the chairman of the House Committee on Agriculture in the last Congress, is mentioned:

You have seen many fine farms, I have no doubt; but, notwithstanding, I think if you could see General Bidwell's farm you would say it surpassed, in everything, any farm that it might have been your pleasure to have seen previously. This grand farm contains twenty odd thousand acres of the finest land in California, extending as it does from the

Sacramento river to the Sierra Nevada mountains; the soil is susceptible of producing any variety of grain, fruit, or plant. You may know what soil it must be to yield yearly 40 bushels of wheat to the acre. General Bidwell produces a large amount of farm stock and grain, and is also extensively engaged in fruit-growing. I might mention that in addition to the apple, peach, and pear, he grows extensively the plum, nectarine, pomegranate, fig, grape, and almond, and has a few olives and English walnuts; and in a short time will have the orange and lemon in fruit, both of which thrive finely in this climate. General Bidwell's house is nearly completed, and when finished will be one of the finest on the Pacific coast.

INDIAN COTTON.—The Department of Agriculture has been repeatedly urged to introduce foreign cotton-seed for trial in the south. While this branch of the government should be awake to all tests of new products or untried varieties of plants of this country, it has always been claimed that the gulf coast already produces the most desirable known varieties of cotton for profitable culture. The inferiority of India cotton is universally acknowledged by manufacturers. It has been tried here with little success, while our cotton has been planted in India amid opposition and prejudice, and has at last achieved an undeniable triumph, as will be seen from the following extract from a report of the Bombay authorities:

In addition to what is described above, (extensive sowings in Dharwar,) large sowings of New Orleans exotic have been made in the Ahmedabad, Rhandeish, Ahmedrugger, Sholapoor, Sattara, and Broach districts of this presidency, as well as in various other parts of India out of the administration of the Bombay government, such as Central India, the Punjaub, Coorg, &c. All interested in the improvement and extension of India cotton cultivation should bear in mind that the New Orleans variety is the most productive of any; at a rough computation, the yield of this description must be 20 per cent. in excess of most other superior varieties, and, probably, as much as 40 per cent. over some of the inferior kinds.

Four years ago 214,000 acres in Dharwar were sown with American cotton. Last year 300,398 acres in that district were sown with the same description, and 465,086 acres in other districts of Bombay.

FRENCH IMPORTS AND EXPORTS.—The following are the principal items of imports and exports of France in 1866. The prominence of textile manufactures will be seen at a glance:

IMPORTS FOR CONSUMPTION.

	Francs.
Cotton	147,998,997
Silk	96,688,655
Cotton yarn	10,992,441
Woollen yarn	6,868,905
Flax and hemp yarn	5,884,554
Goats' hair yarn	7,002,016
Wool	73,835,758
Woollen tissues, &c	34,264,815
Cotton tissues	17,164,839
Silk tissues	4,500,235
Linen tissues	4,366,352
Cashmere tissues	5,269,865
Ready-made linen and clothes	1,322,795
Coal	32,813,181
Copper, (ore not included)	31,349,036
Iron, (ore not included)	7,215,140
Tin	4,491,144
Coffee	12,583,606
Machinery	12,267,835
Iron vessels	8,340,550
Wooden vessels	1,585,920
Hides	8,765,973
Jute	9,073,584
Iron tools	4,716,161
Indigo	3,766,147
Grain	4,058,010
Pottery and glass	1,531,445
Rags	1,049,043

EXPORTS OF FRENCH PRODUCTIONS.

	Francs.
Silk tissues	265,524,927
Woollen tissues	99,442,169
Cotton tissues	11,509,056
Linen tissues	3,369,094
Raw silk	25,804,629
Wool	6,983,190
Goats' hair	6,341,603
Yarn of all kinds	4,613,228
Grain	62,993,073
Flour	52,009,280
Mercery and buttons	58,675,545
Brandy and spirits	51,533,085
Wines	42,381,510
Butter	50,522,161
Eggs	38,477,403
Leathern articles	46,524,064
Cattle	32,597,374
Linen wearing apparel	15,960,753
Millinery and artificial flowers	14,172,677
Chemical products	12,590,580
Raw sugar	11,502,749
Refined sugar	7,535,997
Rags	6,514,988
Tools	6,818,584
Pottery and glass	7,148,126
Hides	4,148,283
Prepared skins	28,698,532
Turnery	2,826,790

Difference in quality and value of Milk.—Too little attention is paid to *quality* in milk. Much is complained of adulteration, and very justly; but little is thought of the adulteration practiced before *milking*. Dr. Voelcker has analyzed six samples of unadulterated milk, and the difference in yield of butter ranged 7.62 to 1.79 per cent. The poverty of food accounted for the reduction in quality. Attention should be carefully given to selection of cows, not only as regards quantity but quality. An example of an English cow is given by the Pall Mall Gazette, which for eight consecutive years gave an average of 1,210 gallons per annum, one year giving 1,230 gallons in 328 days, which yielded 540 pounds of butter, valued at £27, or $135, at 25 cents per pound. It took 22¾ pounds to one of butter.

Analysis of Soot.—The following is an analysis of a sample of soot recently made in the laboratory of the Chemico-Agricultural Society of Ulster, England. Having been stored for some time, it had attracted seven per cent. of moisture; 100 parts of it were found to consist of—

Moisture	7.10
Carbonaceous matters	63.32
Mineral matters	29.58
	100.00

The organic matter was capable of yielding three parts of ammonia. The mineral matter consisted of—

Oxide of iron	4.06 parts.
Sulphate of lime	8.75 parts.
Silica and sand	15.85 parts.
Alkaline salts	0.39 parts.

Dr. Hodges stated that the soots from some kinds of coal frequently contained as much as seven per cent. of ammonia.

A conversation took place on the subject. Steam soot was said to be of little or no value, and the carbonaceous particles in soot in general averaged from 40 to as much as 80 per cent.

Geese.—The breeding and raising of geese can be made a source of considerable profit. It can be made a larger business than is generally supposed practicable. Many have proved it remunerative in this country, but none have carried it to such an extent as have poultry breeders in Europe. Norfolk, in England, is celebrated for its poultry of all kinds. A single operator there, a Mr. Bagshaw, last year fattened 12,000 geese for market. The feeding commences about the middle of November, using barley-meal and brewers' grains. The quantity of food required is about 90 coombs (of four bushels) of barley-meal and 60 coombs of grains daily. The manure from such an immense number of fowls, fed upon such a description of food, is very valuable, and frequent applications for the sale of it are made; but as Mr. Bagshaw holds a farm close by his poultry-yard, he prefers to make use of it himself. It takes about six days to make preparations for the market, and about 100 dressers are employed in the work. During the last Christmas week, no less than from 70 to 80 tons weight were sent away from Norwich by rail, the geese averaging in weight from nine to 16 pounds. Last year some weighed as much as 22 pounds; but, as a rule, the birds were not so fine this year. The feathers realized from the lot of 12,000 amounts, in round numbers, to 4,000 pounds; the quills and waste feathers being kept separately, and sold by themselves.

The Consumption of Mussels.—A bushel measure will contain, at a rough estimate, 2,000 mussels, and in London only, 50,400 bushels are consumed annually for the "million." "One million quarts, sold in the streets at one penny per quart, give a return of £4,000 per annum." The consumption in Edinburgh and Leith is ten bushels per week—in all, 400 bushels per year. But even this

is a mere nothing compared to the supply required for deep-sea fishing. There are four large deep-sea fishing boats at Newhaven, which generally go out three times a week thirty weeks in the year; each boat carries a crew of eight men and eight fishing lines, each line 800 yards in length; to bait each of these long lines, 1,200 mussels are required. Add to the four deep-sea fishing boats sixteen lesser craft that go fishing every day, wind and weather permitting, (Sundays excepted,) for the annual supply of which 3,456,000 mussels are needed for baiting the lines, and the number of these shell-fish consumed each year in Newhaven only will be seen to be something enormous. Quite as many, if not more, are used at Musselburg, Buckhaven, Elie, Anstruther, and elsewhere in Scotland.

Grain Estimates from local data.—A gentleman in the wheat trade in Jerseyville, Illinois, writes as follows:

In my dealings with the farmers—for my purchases are mostly from them—I have frequent occasion to correct wrong impressions. Many of them form the willing opinion that when their own crops fail partially, or a severe drought threatens their destruction, as has been the case for the past two months, that the whole country is suffering in like manner, and that, consequently, grain must materially enhance in price before another crop can be produced; and again, because wheat went up last year, it must necessarily do so this year. With these views many of them hold back and will not sell until they see another bountiful crop staring them in the face; when they often take much less than they could have obtained months before. Many of them are laboring under this delusion now, notwithstanding every State nearly has produced a surplus.

The Paterson Potatoes.—The Paterson seedling potatoes, from Dundee, Scotland, which have been mentioned heretofore in the reports of the experimental garden, produced last season as follows, in Celle, Hanover, kingdom of Prussia, in light, sandy soil, while other varieties were disastrously blighted:

Victoria, per imperial acre, 7½ tons, contains starch	21.15
Napoleon, per imperial acre, 5⅝ tons, contains starch	16.50
Regent, per imperial acre, 7½ tons, contains starch	12.00
Early, per imperial acre, 7½ tons, contains starch	16.50
Seedling Rock, per imperial acre, 9¾ tons, contains starch	14.00
Red, per imperial acre, 9 tons, contains starch	17.63
Blue, per imperial acre, 7½ tons, contains starch	14.00

Root Culture in Maryland.—George F. Armor, of Ellwood, Baltimore county, Maryland, communicates the following result of an experiment in the culture of the Mangold Wurzel, undertaken to test the profit of such a crop in that neighborhood. The yield, as will be seen, was something more than four bushels to the square rod, or about 700 bushels per acre, produced at a cost of a little more than ten cents per bushel:

I had a piece of ground prepared 15 by 120 feet, southern exposure, slightly rolling, but inclined to be wet. After ploughing and manuring, (with stable manure,) the seed was run in drills three feet apart, making six rows 120 feet long, on or about May 10. Upon thinning out, enough plants were cast away to have run at least 12 rows additional. The roots were gathered November 8, and the result was 28 bushels. The tops I fed to the cattle, and they were eaten with great avidity, and the roots were greatly relished. So far as I can judge from so limited experiment, the result is highly satisfactory. The whole cost, including 12 ounces of seed, (Long and Yellow Globe mixed,) at $1 per pound, three cultivatings, including use of horse, does not exceed $3, or about $72 per acre.

Result of Pig Feeding.—Daniel Edwards, of Little Genesee, Alleghany county, New York, gives the following statement of his experience in feeding a pair of Chester White pigs, showing very satisfactory results, except that he claims too much for the meal, forgetting the sour milk and the clover:

Permit me to relate my first experience with the "Chester White pigs," a pair procured last June. On the 10th of July the sow pig weighed 65 pounds, the boar 55 pounds. They were kept in a pen until after the clover bloomed, after haying, when they were let into a clover field. Their principal food was unsifted corn meal, cooked by boiling, with alittle salt, every pound of meal being weighed. They had about a pailful of whey or sour milk daily, besides the meal and clover. On the 6th of October the sow weighed 187 pounds, the boar 159 pounds, a gain of 226 pounds in 88 days. They ate 315 pounds of meal, 3 pounds and 9 ounces daily, producing 11⅛ ounces of line flesh for 1 pound of meal.

THE CUMBERLAND TABLE LANDS OF TENNESSEE.—The agricultural abundance of this region is indicated by the prevailing prices of farm produce. At Tullahoma, midway between Nashville and Chattanooga, on the railroad, wheat was sold last fall for $1 50, when it was selling in the interior of Minnesota, where little else but wheat is grown, for $1 60 per bushel. At the same time corn was 50 to 60 cents, potatoes 50 cents per bushel, butter 20 cents per pound, eggs 15 cents per dozen, beef 6 to 8 cents per pound at retail, and cows $18 to $40 each. It is reported that the ground was covered with snow but eight days last winter, and that at no time did the snow remain on the ground more than 48 hours, the frost penetrating not more than two or three inches. Farmers can labor out of doors nearly all winter, and ploughing is interrupted only a small portion of the time. Coal, iron and timber abound, with limestone, sandstone and hydraulic lime; most of the land is comparatively level and moderately fertile; the grasses flourish; all ordinary farm crops are grown, and fruits, particularly peaches, are a sure crop. Good farms in this county can be bought at $5 to $10 per acre. Wild lands can be had as low as one dollar per acre.

ANTS AT THE ROOTS OF FRUIT TREES.—Rev. W. P. Smith, M. D., of Fayetteville, Texas, communicates the following successful mode of dealing with ants at the roots of fruit trees, which are very troublesome and destructive, particularly in warm climates:

I was raising some tobacco, and operated with the green leaves in the following manner: I removed the earth from around the trees or vines as much as I could without injuring the roots; then I put a handful of the tobacco leaves around the tree, or vine, where the ants worked, covered them nicely with the earth, pressed it well. In a few cases I had to repeat the dose, but I have tried it often, with uniform success in driving the ants and saving the tree or vine.

GRASSHOPPERS.—A letter to Hon. W. H. Hooper, delegate from Utah, gives the following statement concerning the grasshopper pest in the vicinity of Salt Lake City:

I have found a great number of "hoppers" in my lot, and a specimen of dirt from the southeast corner of this city demonstrated the presence of large numbers, averaging from 200 to 250 to the square inch, all alive and hearty. On the northeast bench (facing south) there are hundreds hopping around already.

William Fuller, secretary of the Salt Lake Farmer's club, writes under date of April 30:

"Hoppers" are hatching out very freely and very fast. I have seen in many parts of this city the ground and shrubbery covered with minute objects. The cold weather does not seem to effect them, or if it does, their places are quickly filled.

METEOROLOGY.

[Compiled in the Department of Agriculture, from reports made by the observers for the Smithsonian Institution.]

MARCH, 1868.

Table showing the highest and lowest range of the thermometer, (with dates prefixed,) the mean temperature, and amount of rain and melted snow, (in inches and tenths,) for March, 1868, at the stations named and as given by the observers named. Daily observations were made at the hours of 7 a. m. and 2 and 9 p. m.

Stations, &c.	Counties.	Observers.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.
MAINE.				°		°	°	*In.*
Steuben	Washington	J. D. Parker	14	50	1, 2	— 2	29.2	3.80
West Waterville	Kennebec	B. F. Wilbur	31	55	6	— 5	31.6	3.53
Gardiner	....do	R. H. Gardiner	27, 31	54	6	— 1	33.0	2.38
Standish	Cumberland	John P. Moulton	27	53	6	— 2	31.2	2.19
Norway	Oxford	Howard D. Smith	31	56	6	— 3	30.9	.....
Cornish	York	Silas West	31	56	1	— 4	31.1	2.07
Cornishville	....do	G. W. Guptill	31	52	1, 2	— 2	31.6	2.18
Averages							31.2	2.69
NEW HAMPSHIRE.								
Portsmouth	Rockingham	John Hatch	14	62	1	1	34.0	.....
Stratford	Coos	Branch Brown	16	59	1	—13	26.2	0.95
North Barnstead	Belknap	C. H. Pitman	15, 17	52	1	0	33.1	2.07
Concord	Merrimack	John T. Wheeler	18	58	6	— 2	33.0	.....
Goffstown Centre	Hillsboro'	Alfred Colby	31	60	1, 2, 3	—10	27.9	.....
Averages							30.8	1.51
VERMONT.								
Lunenburg	Essex	H. A. Cutting	31	57	1	—12	28.3	2.89
North Craftsbury	Orleans	Edward P. Wild	31	58	1	— 6	31.8	2.57
Randolph	Orange	Charles S. Paine	31	60	1	—16	28.4	1.66
Woodstock	Windsor	Doton & Miller	31	57	1, 5	—14	.....	.....
Middlebury	Addison	H. A. Sheldon	16, 17	58	2	— 9	30.6	2.25
Averages							29.8	2.27
MASSACHUSETTS.								
Kingston	Plymouth	G. S. Newcomb	14, 15	60	4	2	36.2	4.15
Topsfield	Essex	S. A. Merriam	15	55	1	2	32.2	3.41
Lawrence	....do	John Fallon	14, 15, 18	55	2	2	33.7	1.56
Georgetown	....do	S. A. Nelson	15	56	1, 3	4	32.9	.....
Newbury	....do	John H. Caldwell	15	57	1	1	33.3	.....
Milton	Norfolk	Rev. A. K. Teele	18	61	1	— 1	33.9	1.70
Brookline	....do	Rev. J. B. Perry	17	71	3	2	37.7	.....

Table showing the range of the thermometer, &c., for March—Continued.

Stations, &c.	Counties.	Observers.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.
				°		°	°	*In.*
MASS.—Continued.								
North Billerica	Middlesex	Rev. E. Nason	17, 27, 31	58	6	— 2	34.6	.....
West Newton	....do	John H. Bixby	17	62	1	— 4	35.0	.....
New Bedford	Bristol	Samuel Rodman	14	58	4	2	35.2	4.52
Worcester	Worcester	Jos. Draper, M. D	15	56	3	— 2	33.9	3.82
Mendon	....do	Jno. G. Metcalf, M. D	17	60	3, 4	— 2	33.1	.....
Lunenburg	...do	Geo. A. Cunningham	15, 31	58	4	— 3	34.1	2.30
Amherst	Hampshire	Prof. E. S. Snell	31	60	1	— 7	33.8	3.25
Richmond	Berkshire	Wm. Bacon	31	67	1	— 4	37.8	3.63
Williams College	....do	Prof. A. Hopkins	17	65	3	— 2	32.0	1.20
Averages							34.3	2.95
RHODE ISLAND.								
Newport	Newport	Wm. H. Crandall	28, 31	64	4	4	35.9	4.60
CONNECTICUT.								
Pomfret	Windham	Rev. D. Hunt	15	55	3	— 3	32.4	2.20
Columbia	Tolland	Wm. H. Yeomans	15	63	3	— 4	36.0	.....
Middletown	Middlesex	Prof. John Johnston	28	63	3	— 5	35.1	2.78
Colebrook	Litchfield	Charlotte Rockwell	15	64	3	—10	32.6	.....
Groton	New London	Rev. E. Dewhurst	31	60	4	— 3	34.5	2.47
Averages							34.1	2.48
NEW YORK.								
Moriches	Suffolk	E. A. Smith & daugh's	31	70	4	0	39.4	3.29
South Hartford	Washington	G. M. Ingalsbe	31	67	4	— 7	34.8	2.45
Troy	Rensselaer	Jno. W. Heimstreet	31	63	1	— 1	35.5	2.06
Germantown	Columbia	Rev. S. W. Roe	15	70	3	— 1	36.9	4.20
Garrison's	Putnam	Thomas B. Arden	31	61	3	2	37.0	2.62
Throg's Neck	Westchester	Miss E. Morris	31	62	3	3	37.1	.....
White Plains	....do	O. R. Willis	17	60	3	2	35.3	.....
Deaf and Dumb Inst.	New York	Prof. O. W. Morris	31	57	3, 4	4	36.7	3.69
Columbia College	....do	Prof. Chas. A. Joy	17	59	3	8	39.3	2.60
Flatbush	King's	Eli T. Mack	31	58	3	3	36.2	1.35
Newburgh	Orange	James H. Gardiner	31	65	3	— 5	37.5	2.25
Minaville	Montgomery	Prof. D. S. Bussing	31	61	3	—10	28.4	2.73
Gouverneur	St. Lawrence	C. H. Russell	17	64	1	—22	31.1	1.86
North Hammond	....do	C. A. Wooster	17, 31	70	1	—15	30.7	3.93
South Trenton	Oneida	Storrs Barrows	16	65	1	—18	30.4	3.00
Cazenovia	Madison	Prof. Wm. Soule	17	64	1	—10	32.7	.....
Oneida	....do	S. Spooner, M. D	16	67	1	—10	.....	4.80
Houseville	Lewis	Walter D. Yale	17	59	1	—12	31.1	3.31
Depauville	Jefferson	Henry Haas	17	66	1	—10	32.7	4.47
Theresa	....do	S. Gregory	17	68	1	—22	.....	2.22
Oswego	Oswego	Wm. S. Malcolm	17	65	1	0	33.8	3.80
Palermo	....do	E. B. Bartlett	17	60	1	— 8	30.5	2.60
Nichols	Tioga	Robert Howell	17	66	5	—11	35.3	.....
Newark Valley	....do	Rev. Sam'l Johnson	17, 30, 31	60	1, 4	—12	29.8	.....
Geneva	Ontario	Rev. Dr. W. D. Wilson	9, 15	64	3	— 4	35.9	2.46
Rochester	Monroe	Henry W. Mathews	17	72	3	— 4	34.8	4.38
Do	....do	W. L. M. Fiske, M.D	17	72	3	— 7	34.7	4.38
Little Genesee	Allegany	Daniel Edwards	30	68	5	—22	33.6	2.80
Suspension Bridge	Niagara	W. M. Jones	17	64	3	— 5	38.0	.....
Buffalo	Erie	Wm. Ives	28	63	3	—11	34.7	4.66
Averages							34.4	3.16

Table showing the range of the thermometer, &c for March—Continued.

Stations, &c.	Counties.	Observers.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.
NEW JERSEY.				°		°	°	*In.*
Paterson	Passaic	Wm. Brooks	14, 31	62	3	1	37.2	2.68
Newark	Essex	W. A. Whitehead	31	61	4	2	37.3	2.17
New Brunswick	Middlesex	Geo. H. Cook	17	77	3	4	36.2	1.60
Trenton	Mercer	E. R. Cook	17	68	4	1	41.2	2.99
Burlington	Burlington	John C. Deacon	17	80	4	4	41.2	3.60
Moorestown	....do	Thos. J. Beans	17	79	3	2	38.1	2.68
Mount Holly	....do	M. J. Rhees, M. D	17	80	4	2	40.0	.....
Elwood	Atlantic	Joseph S. Fritts	17	75	4	4	40.2	.....
Dover	Morris	Howard Shriver	17	68	3	1	36.8	2.41
Haddonfield	Camden	Samuel Wood	17	78	3	4	39.0	3.54
Newfield	Gloucester	E. D. Couch	17	80	1, 3, 4	4	39.6	.....
Greenwich	Cumberland	R. C. Sheppard	17	76	3	8	40.2	5.31
Vineland	....do	John Ingram, M. D	17	81	3, 4	5	41.9	4.82
Averages							39.2	3.18
PENNSYLVANIA.								
Nyces	Pike	John Grathwohl	15	70	1	—10	35.7	3.30
Fallsington	Bucks	Eben'r Hance	17	78	4	0	39.3	2.50
Philadelphia	Philadelphia	Prof. J. A. Kirkpatrick	17	76	3	9	40.9	3.80
Germantown	... do	Thomas Meehan	17	80	3	2	38.0	.....
Horsham	Montgomery	Miss Anna Spencer	17	80	3	2	38.2	3.01
Plymouth Meeting	....do	Marcus H. Corson	17	78	3, 4	5	38.2	.....
Dyberry	Wayne	Theodore Day	17	69	5	—22	32.0	.....
Whitehall	Lehigh	Edward Kohler	31	62	1	— 2	36.5	.....
Parkesville	Chester	F. Darlington, M. D	17	75	5	0	37.1	3.20
Reading	Berks	J. Heyl Raser	31	65	3	5	39.0	.....
Ephrata	Lancaster	W. H. Spera	15, 31	68	3	0	40.3	2.37
Harrisburg	Dauphin	John Heisely, M. D.	31	62	3	6	38.6	2.47
Ickesburg	Perry	Wm. E. Baker	15	71	3	— 2	37.2	2.31
Lewisburg	Union	Prof. C. S. James	31	64	5	—11	35.0	2.38
East Tioga	Tioga	E. T. Bentley	30	74	3	—20	32.8	2.05
Grampian Hills	Clearfield	Elisha Fenton	31	63	3	—14	32.7	4.03
Murrysville	Franklin	F. L. Stewart	15	71	3	— 3	41.0	3.44
Franklin	Venango	Rev. M. A. Tolman	15	68	3	—25	36.2	.....
Connellsville	Fayette	John Taylor	15	72	3	— 7	42.8	.....
Beaver	Beaver	Rev. R. T. Taylor	15	69	3	0	43.3	3.20
New Castle	Lawrence	E. M. McConnell	15	68	3	— 7	40.9	.....
Canonsburg	Washington	Rev. W. Smith, D. D	16	76	3	— 4	43.0	3.76
Factoryville	Wyoming	Rodman Sisson	17	69	5	—20	34.4	.....
Averages							28.0	2.99
MARYLAND.								
Woodlawn	Cecil	Jas. O. McCormick	17	80	4	0	39.4	3.00
Annapolis	Anne Arundel	Wm. R. Goodman	16	70	4	6	43.5	3.41
St. Inigoes	St. Mary's	Rev. J. Stephenson	17	76	4	12	44.7	3.69
Emmittsburg	Frederick	Eli Smith	15	72	3	2	39.5	.....
Mt. St. Mary's Coll	....do	Prof. C. H. Jourdan	15	66	3	2	39.6	2.43
Averages							41.3	3.13
VIRGINIA.								
Surry C. H	Surry	B. W. Jones	17	88	4	16	51.7	.....
Comorn	King George	E. Tayloe	17	86	3, 4	15	48.7	0.24

Table showing the range of the thermometer, &c, for March—Continued.

Stations, &c.	Counties.	Observers.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.
VIRGINIA—Con.				°		°	°	*In.*
Lynchburg	Campbell	C. I. Merriwether	17	76	3	19	49.2	.....
Snowville	Pulaski	J. W. Stalmaker	16	74	3, 4	12	45.5	13.25?
Mt. Solon	Augusta	Jas. T. Clarke, M. D.	17	82	3	12	48.3	.....
Wytheville	Wythe	James A. Brown	.....	.....	3	10	46.0	2.30
Averages							48.2	5.26
WEST VIRGINIA.								
Romney	Hampshire	W. H. McDowell	15	78	3	6	44.4	.....
Cabell C. H	Cabell	C. L. Roffe	15, 16	76	3	8	49.2	2.70
Burning Springs	Wirt	Rob't H. Bliven	16	104?	2, 3	10	53.1	.....
Averages							48.9	2.70
NORTH CAROLINA.								
Goldsboro'	Wayne	E. W. Adams, A. M.	17	84	4	23	53.6	3.35
Oxford	Granville	Wm. R. Hicks, M. D.	17	80	3, 4	22	49.0	4.20
Raleigh	Wake	Rev. F. P. Brewer	17	84	5	18	50.0	4.60
Albemarle	Stanley	F. J. Kron	17	88	5	16	51.6	4.70
Statesville	Iredell	Thos. A. Alison	17	81	4	15	47.7	3.25
Asheville	Buncombe	E. I. Aston	24	75	3	17	48.9	.....
Kenansville	Duplin	Prof. N. B. Webster	17	85	3, 4	20	50.9	2.36
Averages							50.2	3.74
SOUTH CAROLINA.								
Aiken	Barnwell	John H. Cornish	16	84	4, 5	32	55.8	3.51
Gowdysville	Union	Charles Petty	24	82	4, 5	22	52.9	.....
Averages							54.4	3.51
GEORGIA.								
Atlanta	Fulton	F. Deckner & Son	24	83	4	22	54.5	2.71
Macon	Bibb	Jno. A. Rockwell	16	85	3	34	60.1	4.35
Averages							57.3	3.53
ALABAMA.								
Moulton	Lawrence	Thos. M. Peters, A. M.	16	78	3	30	55.6	5.54
Carlowville	Dallas	H. L. Alison, M. D.	14, 15, 24	82	3	34	62.2	3.50
Fish River	Baldwin	W. J. Van Kirk	15, 16	84	4	30	63.5	2.20
Opelika	Lee	J. H. Shields	24	82	3	32	60.6	.....
Greene Springs	Hale	J. W. A. Wright	16	85	3	34	60.6	3.31
(Near) Havana	do	S. K. Jennings, M. D.	24	82	3, 4	34	60.0	3.52
Averages							60.4	3.61
FLORIDA.								
Jacksonville	Duval	A. S. Baldwin	16, 17	90	5	46	66.7	1.35
Port Orange	Volusia	J. M. Hawks	14	85	23	44	64.6	.....
Lake City	Columbia	Galen M. Fisher	16, 17	84	4	39	62.8	.....
Averages							64.7	1.35
TEXAS.								
Columbia	Brazoria	Hennell Stevens	15	88	3	40	67.1	1.76
Waco	McLellan	Edw. Merrill, M. D.	22	83	3	38	63.7	10.60
Austin	Travis	J. Van Nostrand	14, 16	83	3	40	64.7	4.55
Houston	Harris	Miss E. Baxter	10	80	3	41	67.8	.....
Averages							65.8	5.64

Table showing the range of the thermometer, &c., for March—Continued.

Stations, &c.	Counties.	Observers.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.
LOUISIANA.				°		°	°	*In.*
New Orleans	New Orleans	Robt. W. Foster	16	83	3	53	.....	.....
Benton	Bossiere	J. H. Carter	24	82	3	33	61.6	.....
Averages							61.6	.....
MISSISSIPPI.								
Grenada	Yalabusha	Albert Moore	16	80	3, 4	34	59.0	.....
Natchez	Adams	Wm. McCary	16	80	3	37	63.2	8.42
Marion	Lauderdale	T. W. Flores, M. D.	24	88	3	28	61.0	8.70
Brookhaven	Lawrence	T. J. R. Keenan	24	82	3	39	62.0	.....
Averages							61.3	8.56
ARKANSAS.								
Helena	Phillips	O. F. Russell	24	86	3	32	59.2	.....
TENNESSEE.								
Lookout Mountain	Hamilton	Rev. C.F.P. Bancroft	25	80	3	21	55.1	.....
Clarksville	Montgomery	Prof. W.M. Stewart	15, 16	78	3	21	55.0	5.52
Memphis	Shelby	Edw. Goldsmith	24	82	3	27	57.4	4.17
Elizabethton	Carter	Charles H. Lewis	10	79	4	16	50.1	.....
Averages							54.4	4.85
KENTUCKY.								
Chilesburg	Fayette	Sam'l D. Martin, M.D	15, 16, 25	76	3	10	49.9	3.47
Louisville	Jefferson	Mrs. L. Young	23	78	3	17	52.6	6.83
Danville	Boyle	O. Beatty	25	82	4	18	.....	.....
Lexington	Fayette	S. R. Williams	25	76	3	11	53.7	3.86
Averages							52.1	4.72
OHIO.								
New Lisbon	Columbiana	J. F. Benner	17, 24, 25, 31	65	3	—12	40.4	3.12
Steubenville	Jefferson	Joseph B. Doyle	15	67	3	0	44.0	.....
Milnersville	Guernsey	Rev. D. Thompson	23	76	3	—10	38.2	3.97
Cleveland	Cuyahoga	Mr. & Mrs. G. A. Hyde	17	67	3	— 5	37.2	4.20
Do	do	T. A. Smurr, M. D.	17	68	2, 3	— 2	40.2	.....
Wooster	Wayne	Martin Winger	15	74	3	—20	42.0	.....
Gallipolis	Gallia	Alex. P. Rodgers	15	76	3	3	48.5	3.69
Kelley's Island	Erie	Geo. C. Huntington	23	62	2	— 5	36.2	3.91
Sandusky	do	Thomas Neill	15	65	3	— 5	38.2	5.96
Norwalk	Huron	Rev. A. Newton	15	72	3	— 6	39.4	3.57
Carson	do	Mrs. M. M. Marsh	23	70	3	— 8	41.1	3.93
North Fairfield	do	O. Burras	15	72	3	—13	39.6	4.77
Westerville	Franklin	Prof. Jno. Haywood	15	74	3	— 3	41.3	7.93
Marion	Marion	H. A. True, M. D.	23	69	3	—11	39.6	7.42
Toledo	Lucas	J. B. Trembly, M. D.	15, 23, 30, 31	62	3	— 6	38.3	8.75
Bowling Green	Wood	John Clarke	23	77	3	—24	39.9	14.00
Kenton	Hardin	C. H. Smith, M. D.	16	60	3	4	39.8	12.72
Urbana University	Champaign	M. G. Williams	15, 23	72	3	0	42.6	7.51
Hillsboro'	Highland	J. McD. Mathews	15	71	3	3	44.5	6.59
Bethel	Clermont	Geo. W. Crane	15	73	3	4	46.0	5.75
Cincinnati	Hamilton	Geo. W. Harper	15	74	3	8	47.0	4.87
Do	do	R. C. Phillips	15	75	3	14	50.7	5.41
College Hill	do	John W. Hammitt	15	73	3	6	45.8	10.48
Averages							42.7	6.43

Table showing the range of the thermometer, &c., for March—Continued.

Stations, &c.	Counties.	Observers.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.
MICHIGAN.				°		°	°	*In.*
Monroe City	Monroe	Miss F. Whelpley	30, 31	71	3	— 8	37.0	3.35
State Agricult'l Col.	Ingham	Prof. R. C. Kedzie	30, 31	64	4	— 7	37.8	4.65
Litchfield	Hillsdale	R. Bullard	23	69	4	—10	37.0	5.62
Grand Rapids	Kent	E. S. Holmes, D.D.S.	31	68	4	— 6	38.1	.....
Northport	Leelenaw	Rev. Geo. N. Smith	31	64	4	—11	31.2	.....
Otsego	Allegan	Milton Chase, M.D.	14, 15, 16, 29	68	4	— 2	40.0	.....
Holland	Ottawa	L. H. Streng	16	68	4	— 8	38.4	4.50
Copper Falls	Keweenaw	Dr. S. H. Whittlesey	29	53	2	— 5	26.6	2.95
Averages							35.8	4.09
INDIANA.								
Aurora	Dearborn	Geo. Sutton, M. D.	23	76	3	8	48.2	6.99
Vevay	Switzerland	Chas. G. Boerner	23	82	3	10	50.3	5.40
Muncie	Delaware	G. W. H. Kemper, M.D	23	76	4	4	43.5	10.00
Spiceland	Henry	Wm. Dawson	23	74	4	5	43.7	7.10
Columbia City	Whitley	Dr. F. and Miss L. McCoy.	23	78	3, 4	— 2	39.7	8.00
Indianapolis	Marion	W. J. Elstun, M. D.	23	76	4	7	44.6	7.09
Rensselaer	Jasper	Dr. J. H. Loughridge	23	77	3, 4	8	42.9	11.25
Merom	Sullivan	Thomas Holmes	23	73	3	7	47.8	8.55
New Harmony	Posey	John Chappellsmith	23	78	3	15	52.0	6.40
Carthage	Rush	Charles M. Hobbs	23	72	2	0	44.5	7.75
State University	Monroe	Prof. C. M. Dodd	23	72	3	14	46.9	7.58
Averages							45.8	7.83
ILLINOIS.								
Chicago	Cook	J. G. Langguth, jr.	16	72	3	5	43.8	5.25
Near Chicago	do	Samuel Brookes	23	84	3	— 4	41.7	.....
Marengo	McHenry	O. P. Rogers	23	75	3	— 8	38.1	5.40
Golconda	Pope	Wm. V. Eldredge	16	84	3	12	53.1	4.10
Aurora	Kane	A. & E. D. Spaulding	23	71	3	—10	38.0	6.88
Sandwich	De Kalb	N. E. Ballou, M. D	23	74	3	— 8	39.6	4.86
Ottawa	La Salle	Mrs. E. H. Merwin	23	78	2	1	42.6	4.48
Wapello	De Witt	T. Louis Groff	23	80	3	—13	45.5	4.88
Winnebago	Winnebago	J. W. & Miss Tolman	23	73	3	— 9	38.3	4.78
Magnolia	Putnam	Henry K. Smith	23	82	3	— 5	43.2	6.50
Rochelle	Ogle	Daniel Carey	16	74	3	—12	38.5	.....
Wyanet	Bureau	E. S. & Miss Phelps	23	74	3	— 6	42.3	4.75
Tiskilwa	do	Verry Aldrich	23	77	3	0	42.8	.....
Elmira	Stark	O. A. Blanchard	16	76	2	6	44.7	5.73
Peoria	Peoria	Frederick Brendel	23	75	3	9	45.7	5.38
Springfield	Sangamon	G. M. Brinkerhoff	16	75	3	4	44.0	.....
Waterloo	Monroe	H. Künster	23	80	3	18	51.3	.....
Dubois	Washington	Wm. C. Spencer	15	74	3	8	43.8	8.43
Galesburg	Knox	Prof. W. Livingston	16	75	3	4	43.2	5.40
Manchester	Scott	Dr. J. & C. W. Grant	15	79	3	11	47.6	5.81
Mount Sterling	Brown	Rev. A. Duncan	23	85	2, 3	12	48.9	.....
Andalusia	Rock Island	E. H. Bowman, M. D	16, 23	74	3	2	44.1	.....
Augusta	Hancock	S. B. Mead, M. D.	23	75	3	10	47.6	5.63
Averages							44.1	5.52
WISCONSIN.								
Manitowoc	Manitowoc	Jacob Lüps	31	70	3	— 3	35.0	3.87

Table showing the range of the thermometer, &c., for March—Continued.

Stations, &c.	Counties.	Observers.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.
WISCONSIN—Con.				°		°	°	*In.*
Plymouth	Sheboygan	G. Moeller	31	67	3	— 8	33.0	3.20
Milwaukee	Milwaukee	I. A. Lapham, LL.D	31	70	3	0	36.2	4.59
Appleton	Outagamie	John Hicks	31	62	3	— 5	33.3	1.35
Geneva	Walworth	Wm. H. Whiting	23	74	3	— 3	35.3	.....
Waupacca	Waupacca	H. C. Mead	31	71	3	—17	35.0	.....
Embarrass	....do	E. Everett Breed	31	66	3	—13	32.6	3.61
Edgerton	Rock	Henry J. Shintz	23, 29	80	3	—12	38.5	7.75
New Lisbon	Juneau	J. L. Dungan	31	73	3	—22	36.7	.....
Bayfield	La Pointe	Andrew Tate	31	76	3	—20	28.2	.....
Averages							34.4	4.06
MINNESOTA.								
Beaver Bay	Lake	C. Wieland	31	65	3	—26	26.5	1.51
St. Paul	Ramsey	Rev. A. B. Paterson	31	70	3	—12	32.6	1.22
Minneapolis	Hennepin	Wm. Cheney	31	67	3	—15	32.2	0.90
Sibley	Sibley	C. W. & C. E. Woodbury.	31	67	2, 6	— 6	31.7	1.02
New Ulm	Brown	Charles Roos	31	71	2	0	34.5	0.51
Averages							31.5	1.03
IOWA.								
Clinton	Clinton	Dr. J. P. Farnsworth	23, 30	72	3	— 4	41.9	8.50
Davenport	Scott	D. S. Sheldon	16	71	3	3	41.6	11.84
Dubuque	Dubuque	Asa Horr, M. D	16	71	3	— 1	39.5	3.83
Monticello	Jones	M. M. Moulton	23	77	3	0	41.9	4.02
Burlington	Des Moines	Mrs. James P. Love	31	79	3	14	47.6	.....
Fort Madison	Lee	Daniel McCready	16	76	3	7	45.4	5.94
Guttenberg	Clayton	Jas. P. Dickerson	16, 31	74	3	— 8	36.1	.....
Ceres	....do	Jno. M. Hagensick	23	78	3	5	41.7	.....
Mount Vernon	Linn	Prof. A. Collins	16, 23	75	3	5	41.2	.....
Iowa City	Johnson	Prof. Theo. S. Parvin	31	75	3	3	42.7	6.31
Independence	Buchanan	Geo. Warne, M. D	16, 23	74	3	— 1	39.0	3.00
(Near) Independence	....do	Mrs. D. B. Wheaton	23	76	3	— 8	38.3	2.15
Waterloo	Black Hawk	T. Steed	23	77	3	— 2	39.0	.....
Marble Rock	Floyd	H. Wadey	23, 31	70	3	3	37.9	.....
Iowa Falls	Hardin	N. Townsend	23	74	3	2	35.3	3.82
Algona	Kossuth	Ph. Dorweiler	31	68	3	2	36.4	.....
Do	....do	James H. Warren	31	68	3	4	35.5	.....
Boonesboro'	Boone	E. Babcock	23	80	2	0	38.0	4.59
Fontanelle	Adair	A. F. Bryant	23	82	2	9	41.6	3.76
Logan	Harrison	Jacob F. Stern	22, 23, 24	84	2	13	43.0	2.40
Whitesboro'	....do	David R. Witter	22	81	2	6	40.1	.....
Fort Dodge	Webster	C. N. Jorgensen	23, 31	74	3	5	38.7	3.16
Rolfe	Pocahontas	Oscar I. Strong	30	70	2	4	37.2	3.00
Averages							40.0	4.74
MISSOURI.								
St. Louis University	St. Louis	Rev. F. H. Stuntebeck	23	80	3	16	52.3	6.54
Allenton	....do	A. Fendler	23	88	3	14	50.2	8.87
Canton	Lewis	George P. Ray	23	82	3	12	46.9	4.07
Christian University	....do	I. M. Parker	23	80	3	15	48.3	.....
Hermitage	Hickory	Miss Belle Moore	23	84	2	21	50.9	2.93
Rolla	Phelps	Homer Ruggles	23	87	3	19	51.2	6.59
Harrisonville	Cass	John Christian	23, 30	88	3	20	50.8	2.22

Table showing the range of the thermometer, &c., for March—Continued.

Stations, &c.	Counties.	Observers.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain and melt'd snow.
MISSOURI—Con.				°		°	°	*In.*
Oregon	Holt	William Kaucher	23, 24	87	2	17	48.5	3.60
Jefferson City	Cole	Nicolas De Wyl	23	80	3	18	49.0	.....
Hematite	Jefferson	John M. Smith	23	84	3	18	51.6	8.40
Averages							50.0	5.40
KANSAS.								
Leavenworth	Leavenworth	J. Stayman, M. D	23	95	2	15	49.0	5.16
Olathe	Johnson	Wm. Beckwith	23	91	2	17	48.7	7.70
Atchison	Atchison	Dr. H. B. & Miss Horn	23	92	2	18	48.7	5.80
Lawrence University	Douglas	Prof. F. H. Snow	23	93	2	22	50.9	3.46
Holton	Jackson	Dr. James Watters	23	91	2	15	48.3	.....
State Agricult'l Coll.	Riley	Prof. B. F. Mudge	22	87	2	19	49.4	0.93
Council Grove	Morris	A. Woodworth, M.D.	23	92	2	23	52.3	4.45
Baxter Springs	Cherokee	Ingraham & Hyland	*23	84	2	24	51.6	3.12
Averages							49.9	4.37
NEBRASKA.								
Elkhorn	Washington	John S. Bowen	24	85	2	12	42.7	.....
De Soto	....do	Charles Seltz	24	86	2	11	41.7	2.74
Glendale	Cass	Dr. A.L. & Miss Child	24	92	2	4	43.9	2.75
Dakota	Dakota	H. H. Brown	.....	.....	.....	.....	40.4	.....
Omaha Agency	(Reserve)	Rev. Wm. Hamilton	22	80	2, 3	15	42.0	*1.32
Bellevue	Sarpy	Mrs. E. E. Caldwell	24	90	2	10	45.3	1.90
Averages							42.7	2.18
MONTANA.								
Helena	Edgerton	A. C. Wheaton	30	67	6	8	38.1	0.90

NOTES ON THE WEATHER FOR MARCH, 1868.

[Compiled in the Department of Agriculture, from the reports of observers for the Smithsonian Institution.]

Steuben, Maine.—Snow on the 3d, light as frost; very severe and driving snow-storm on 21st and 22d.

Lisbon, Maine.—On 1st ground frozen 34 inches. Saw crows on 13th, and heard robins on 28th.

Standish, Maine.—Toughest snow storm of the season on 2d and 3d, and at 5.50 p. m. on 3d an earthquake of a few seconds duration.

Norway, Maine.—Ground frozen in many places 3½ feet. Sparrows and blue-birds seen on 14th.

Cornishville, Maine.—Severe drifting snow-storm on 2d, 8 to 12 inches deep. Robins seen on 16th, blue-birds on 18th.

Stratford, New Hampshire.—Winter remarkably cold and dry, and March gone out dry; snow a foot deep in the woods.

Antrim, New Hampshire.—Thaw from 7th to 20th. Severe snow-storm on 21st, blocking up the roads. Sugar season fairly commenced on 23d, with plentiful flow of sap to end of the month.

Lunenburg, Vermont.—Another dry month; snow nearly gone and roads muddy.

Craftsbury, Vermont.—Month remarkable for rapid transition from winter to spring. Snow disappeared between 5th and 20th. Robins seen on the 16th, a month earlier than usual.

Randolph, Vermont.—Best sugar weather in 20 years since 22d. First real thaw since Christmas began the 9th.

Woodstock, Vermont.—First thunder-storm this season on 16th.

Kingston, Massachusetts.—Great snow-storm (a "line gale" in earnest) on 21st and 22d. Up to April 6½ feet of snow fell, and the ground was never bare during the winter months, and is yet frozen three feet deep.

Georgetown, Massachusetts.—Snows of 2d and 21st were severe. Rain of 12th and 13th quite a storm. From thence to end of month remarkably clear and pleasant, but cold. A few gardens were made 30th and 31st—about 10 days later than usual.

Newbury, Massachusetts.—White frosts on 9th, 20th, 29th, 30th and 31st; on the 29th very heavy. Blue-birds on 12th, robins 15th, black-birds 16th.

New Bedford, Massachusetts.—Ground nearly free from frost, and grass beginning to show the green. Frogs heard on 29th.

Mendon, Massachusetts.—Ponds free from ice on 18th. Snow nearly gone on 31st.

Amherst, Massachusetts.—Blue-birds seen on the 11th, and robins on the 13th.

Richmond, Massachusetts.—On 10th crows and henhawks seen, and robins and phebe-birds very musical. On 31st ponds free from ice, and frogs piping.

Williamstown, Massachusetts.—First thaw on 7th, blue-birds 14th, robins 15th, black-birds 16th, purple thrush 19th; severe snow-storm 21st.

Newport, Rhode Island.—Inner harbor froze over to Goat island for the first time this winter on the 4th; never known to occur in March before. Thunder-showers at 2 a. m. on 17th.

Columbia, Connecticut.—Blue-bird appeared on 8th, robin 10th; severe snow-storm on 21st and 22d; about 6 inches fell, and drifted badly.

Colebrook, Connecticut.—Severe northeast snow-storm on the 2d; about a foot fell.

Moriches, New York.—Month closes with its warmest day, and the frogs in full concert.

South Hartford, New York.—Lake Champlain open to navigation on 20th.

Troy, New York.—Mean temperature of March nearly 2° above the same

for 12 years past. On 2d 10½ inches of snow fell; on the 21st only 3½, but was the most tempestuous of the winter. Hudson river opened on the 15th; had been closed 97 days; crossed by teams 85 days.

Germantown, New York.—Blue-birds on 12th; thunder-storm with vivid lightning on 15th; snow-storm on 21st, very severe, and rendering many roads impassable.

Garrison's, New York.—Month unusually mild and uniform.

New York, New York.—On 21st snow with very high wind, obstructing travel; some drifts here were 10 feet high.

Minaville, New York.—Coldest snow-storm of winter on 2d; 9.75 inches fell. Robins and blue-birds on 15th. Frost out of ground and snow gone 31st.

North Hammond, New York.—First three days of March very severe; remainder finest March weather ever experienced here.

Houseville, New York.—On 7th first thaw since Christmas; first thunder-storm on 16th.

Depauville, New York.—Till 6th wintry cold; in a few days after, the three feet of snow disappeared; ploughing commenced on the 18th and continued through the month, unprecedentedly early.

Theresa, New York.—First thunder-storm on 16th, with zigzag lightning; 27 peals were heard.

Oswego, New York.—Weather unusually fine and clear this March.

Palermo, New York.—Severe snow-storm 2d; ground dry and roads dusty 31st.

Nichols, New York.—On 18th the Susquehanna was within 3 feet of the great freshet of 1865. Ground as dry as in May, 31st.

Newark Valley.—First thunder and lightning on 15th. Farmers never had so good a run of maple sap as this season; some have sowed oats and spring wheat.

Geneva, New York.—Spring forward; ground as dry as usually at midsummer; lake low for any season; blue-birds and robins on 13th—about ten days earlier than usual. The 3d was the coldest March day in 15 years, but the average of the month was 3°.68 warmer than general.

Rochester, New York.—Most furious snow-storm of the season on 2d.

Little Genesee, New York.—The first five days temperature, each night was below zero—the 5th was the coldest day of the winter; on the 6th the first thawing since the year began; on 30th fires were running in the woods, and roads were dusty. On 5th, at 7 a. m., the thermometer stood at —22°; at 2 p. m. at 40°, a change of 62° in 7 hours; on 30th it stood at 68°, a range of 90° in 26 days.

Suspension Bridge, New York.—The "ice bridge" was formed directly below the Falls, for the second time in the memory of any now here, and was 30 feet thick. It was used as a foot bridge for more than two months, but suddenly broke up and disappeared on the night of the 15th.

Buffalo, New York.—March came in cold and stormy; the snow-storm of 2d was the severest of the winter; 12 inches fell, but drifted badly, and all snow disappeared on 15th; robins came on 13th. Excavations after water pipes on the 18th revealed frost 65 inches under ground!

Newark, New Jersey.—The snow-storm of 1st and 2d, which appears to have spread over all north of Maryland and east of Missouri and Iowa, was followed here on the 4th by the lowest fall of the barometer recorded in any March for 25 years—9 inches. On the 20th and 21st the fall was 6 inches.

Trenton, New Jersey.—First ploughing on 19th. The ground has been frozen deeper this winter than in 20 years.

Burlington, New Jersey.—Rain and heavy sleet on 2d; heavy thunder shower 17th; frost out of ground 19th; badly drifting snow-storm 20th and 21st—15 inches fell.

Moorestown, New Jersey.—First thunder shower 17th. March less windy than usual.

Elwood, New Jersey.—Wintry up to 7th; snow and ice gone, and farmers ploughing 10th; first thunder storm 17th; severe snow-storm 20th and 21st—estimated fall 20 inches, but badly drifted and travel stopped.

Dover, New Jersey.—Since the thaw on the 8th, the spring has opened favorably and advanced steadily.

Greenwich, New Jersey.—Month remarkable for cold at commencement, for sudden change to spring weather, and for a late snow-storm, unequalled for depth and severity in 11 years.

Newfield, New Jersey.—Coldest day of the winter, 2d; a drifting snow-storm on the 21st, in which 9 inches fell.

Nyces, Pennsylvania.—Blue-birds on 9th; robins 13th; thunder and lightning, without rain, 15th; thunder shower 16th.

Fallsington, Pennsylvania.—Snow-storms, blocking up roads, 1st and 2d, and on 21st and 22d.

Philadelphia, Pennsylvania.—Barometer lower on 2d, and higher on 6th, than ever observed before in March; heaviest snow-storm of the season on the 21st and 22d.

Horsham, Pennsylvania.—Severe snow storms on 1st and 2d, and on 20th and 21st; pewee heard on 11th; robin 14th; frogs 17th.

Dyberry, Pennsylvania.—The winter had 88 inches of snow, more than any winter in last 14 years. Sleighing lasted 12 weeks. March had 21½ inches of snow, of which 12 inches fell on the 2d. Good maple sugar weather from 23d to close.

Whitehall, Pennsylvania.—Drifting snow-storms on 1st and 21st. Ice on the Lehigh river 2 feet thick; broke up on 10th, and snow and ice went off quietly, without damaging freshets.

Ickesburg, Pennsylvania.—Snow on 20th and 21st, melted as it fell; frost out of ground 28th; ground barely dry enough for gardening 30th.

Tioga, Pa.—Very severe snow-storm (12 inches fell) on 2d; coldest day of winter, 3d; robins and other birds appeared 10th; severe drifting snow-storm 21st; frogs heard 27th. The last 8 days were warm and dry, and more farm work was done than in any March for 25 years.

Grampian Hills, Pa.—Snow badly drifted in some places, but no destructive storms, freshets or ice-gorges this month.

Factoryville, Pa.—Thirty-six hours of severest snow-storm of the season on 20th and 21st.

Murrysville, Pa.—Frozen rain on 2d; *very* cold 3d; crows noisy 4th; frost out of ground 12th; frogs and various spring birds heard 13th; heavy frosts 30th and 31st.

Franklin. Pa.—Snow, 11 inches, 1st and 2d; frogs heard 16th; a few flakes of snow, with light wind, 21st.

Beaver, Pa.—Most inclement snow-storm of the season 2d; coldest day this winter 3d; frost out of the ground 16th.

Newcastle, Pa.—From December 1st to 6th March, winter very uniform and ground covered with snow; last fortnight much ploughing and sowing done; wheat looks unusually fine.

Woodlawn, Md.—Snow first whitened the ground December 12th, and has been visible ever since; is now 3 feet deep in drifts; 14.5 inches fell in March.

Mt. St. Mary's, Md.—Barometer very low 2d; coldest day of the winter 3d; snow 20th, followed by rain 21st.

Surry C. H., Va.—First half of the month mild; last half wet, chilly, and disagreeable from 24th to 31st cloudy, sun not seen for 6 days; first lightning and thunder 17th; fully 4 inches of snow fell on 22d, laid 3 inches deep.

Comorn, Va.—First week cold; second warm; third very warm; fourth raw, wet, and cold; oats sown 14th to 17th; only snow, 2 inches, on 20th.

Lynchburg, Va.—On 20th, 7 inches of snow, with very little wind.

Snowville, Va.—Snow squalls, not enough to cover the ground, on 20th and 21st.

Wytheville, Va.—Tremendous storm of rain, hail, and snow all day on 2d.

Romney, W. Va.—Up to 23d very dry weather.

Cabell C. H., W. Va.—Peach, cherry, and service-berry trees in bloom on 28th.

Burning Springs, W. Va.—General rain, with lightning and thunder, 15th and 23d.

Oxford, N. C.—Peach in bloom 10th; rain, ending in snow which melted as it fell, 20th.

Albemarle, N. C.—Month remarkable for late blossoming of fruit trees; peach in full bloom on 24th, and cherries, pears, and apples not in bloom on 31st.

Kenansville, N. C.—Wind from east from February 11 to March 1, when a violent gale came from southwest, and barometer fell to 23.9, and thermometer rose to 60°.

Aiken, S. C.—Month unusually cold and season backward; but two really windy days; a few flakes of snow, 21st.

Atlanta, Ga.—Peaches and wild plums in bloom 16th, 20 days later than last year.

Opelika, Ala.—Chickasaw plum blossomed 13th, peach 18th, apple 31st; respectively 24, 22, and 18 days later than last year.

Havana, Ala.—Month remarkably mild, dry, and clear. Last frost 21st.

Jacksonville, Fla.—Only two frosts this month; vegetation forward, but rain needed.

Moulton, Ala—Frost and ice until 5th; warm till 18th; frost 18th, 19th, and 21st; then warm till April.

Waco, Texas.—Grasshoppers have entirely destroyed some fields of wheat, and farmers are now planting them with corn; early garden vegetables all eaten by them except green peas.

Austin, Texas.—Grasshoppers doing immense damage, and will continue until their wings grow.

Grenada, Miss.—Vegetation backward till the middle of the month; since then advancing rapidly.

Marion, Miss.—Season unusually favorable; crops looking well; fruit trees loaded with blossoms and young fruit.

Brookhaven, Miss.—Vivid lightning, heavy thunder, torrents of rain and some hail on 1st; gardens fine, trees forward, 18th; ground has not been frozen deeper than 1.5 inches all winter.

Clarksville, Tenn.—Rain, with gentle wind, increasing to a gale from southwest on 1st; wind continued on the 2d.

Memphis, Tenn.—Peach in full bloom on 10th.

Elizabethton, Tenn.—Ground froze half an inch 22d; peach in full bloom 28th.

Chilesburg, Ky.—Rain with driving wind, and snow enough to whiten the ground, on 20th.

New Lisbon, Ohio.—Rain and sleet on 1st; severe snow-storm on 2d; snow nearly gone on 9th; stormy spit of snow on 21st; frost 22d, 23d, 29th, 30th, and 31st.

Steubenville, Ohio.—Very light snow on 1st; barometer unusually low on 2d; sheet lightning and sudden shower on 15th; rain, with heavy thunder and lightning, on 24th.

Kelley's Island, Ohio.—Most violent snow-storm of the season commenced with mist and rain on 1st, and closed on 2d.

Sandusky, Ohio.—Hurricane with thunder and a little rain on 17th.

Greenwich Station, Ohio.—High wind and snow on 2d and 3d; robins on 7th; frogs musical on 15th.

North Fairfield, Ohio.—Drifting snow-storm, in which six inches fell, on 2d; coldest day in the winter on 3d; killed the peaches and cherries.

Bowling Green, Ohio.—A very stormy month; only one clear day. The latter part was warm, starting vegetation finely.

Kenton, Ohio.—Severe snow-storm on 1st and 2d, commenced with rain; coldest day of the season on 2d; frost out of the ground on 14th; thunder-storm, doing much damage ten miles north, on 17th; another, fearful, with hail, on 23d.

Urbana, Ohio.—Month nearly 11° warmer than last year, and 4°.58 above the average of March for 17 years, and quantity of water more than twice the average. The great storm on the 17th did very little damage here.

College Hill, Ohio.—Thunder, wind, and rain on 17th; oldest inhabitants never saw its like for violence; its path was about a mile wide.

Litchfield, Mich.—Continuous rain from 4th to 8th, carrying away the snow; on 31st very warm and dry.

Northport, Mich.—Pleasant but very cold on 2d. March has been very fine; birds are cheerful and the prospect for fruit is good.

Copper Falls, Mich.—March unusually mild, clear and pleasant; only seven stormy days, with but little wind. The six feet of snow at the beginning is now half gone.

Vevay, Indiana.—Violent gale from southwest, with rain, on 1st; ended in a snow-storm from northwest on the 2d.

Muncie, Ind.—The rainfall exceeds that of any month since September, 1866.

Merom, Ind.—Wabash overflowed its banks from 10th to April. A few peach blossoms open, 31st.

Spiceland, Ind.—Rain on 1st, and barometer lower that in 6½ years; snow on 2d; snow nearly all gone, 5th.

Chicago Ills.—Severest snow-storm of the season, 1st; the wind blowing a hurricane in the evening. First good rain for many months, 6th.

Near Chicago, Ills.—About 11 p. m., on 16th, a violent gale from southwest, with thunder, lightning, and rain; on 24th a similar storm, but not so violent.

Golconda, Ills.—Month very forward; gardens made, and peaches, cherries, and plums in full bloom.

Aurora, Ills.—Best March for farm work in many years. Peach buds have been killed, but other fruits promise well.

Sandwich, Ills.—Severest snow storm since 1864 on 1st; continued 24 hours, and blocked up roads worse than for many years.

Ottawa, Ills.—On the 1st, snow, rain, hail, and snow again, drifting badly. Farmers sowing spring grain on 12th.

Winnebago, Ills.—Month's mean temperature 9°.63 above that of March for ten years.

Tiskilwa, Ills.—On 23d frogs and toads heard, the first time in March within my memory.

Dubois, Ills.—On 1st, rain from southeast, southwest, and northwest, successively, with high wind, thunder and lightning, and closing with snow on 2d. This spring is a month earlier than last.

Mount Sterling, Ills.—Thunder-storms on 5th, 15th, 16th, 24th, and 25th—on 24th with a tornado, doing considerable damage. Grain as high as usual on June 1st.

Wapello, Ills.—From 18th to 31st unequalled in 13 years for warmth and pleasant weather. The great equinoctial tornado, that did damage 20 miles north and south of us, did not reach here.

Plymouth, Wis.—Thunder-storms on 14th, 15th, 16th, 23d, and 24th; first wheat sown 30th.

Milwaukee, Wis.—Furious snow-storm on 1st; "March comes in like a lion." Very warm and pleasant on 31st; "March goes out like a lamb." More rain this month than in any month since September, 1865.

Waupacca, Wis.—Month remarkable for mild weather; the 31st as warm as any day in May last year.

St. Paul, Minn.—Mississippi opened to foot of Lake Pepin 21st, and to the head on 24th.

Minneapolis, Minn —Sleighing ceased on 19th; first thunder-storm 24th; wheat sown 27th; ice went out of the Mississippi 30th.

Clinton, Iowa.—On 1st furious storm from northeast; snow, rain, and snow; after that grew mild; farmers sowed a great breadth of wheat, and month closed with a week of steady northeast wind, without rain.

Monticello, Iowa.—Very pleasant month; farmers all done sowing wheat.

Guttenberg, Iowa.—In 19 years I never saw flowers open so early, nor such fine weather in March.

Near Independence, Iowa.—Month unusually warm and pleasant; nearly all the wheat sowed; there is still a scarcity of water in the wells.

Independence, Iowa.—The winter and the month have been mild. A resident here for 27 years says he never saw so fine a March for farmers as this.

Waterloo, Iowa.—The warmest March I ever knew in Iowa.

Algona, Iowa.—Most of the month quite warm and pleasant; first wheat sown on 31st.

Boonsboro' Iowa.—Myriads of grasshopper eggs hatched about 15th; since then three broods have been frozen, but now (31st) myriads more are coming out. No storms here like those in States east of us. Mean temperature of the month 7° higher than usual.

Logan, Iowa.—The warmest March in 10 years; children barefooted, and lambs cropping prairie grass.

Whitesboro', Iowa.—Wheat sowed in February, coming up on 29th; season four weeks earlier than last year.

Rolfe, Iowa.—First prairie flower *(Anemone Nuttalia)* on 31st, 36 days earlier than last year.

Allenton, Mo.—Thunder and lightning on 1st, 16th, 24th, and 25th; heavy gales on 5th, 16th, and 17th; frosts on 30th and 31st, but no damage to peach-buds.

Hermitage, Mo.—Vegetation a fortnight earlier than last year.

Oregon, Mo.—Great hail-storm on the 16th, preceded by heavy thunder and lightning. Spring wheat sprouting on 17th.

Hematite, Mo.—Six inches snow during the winter; ground frozen 11 inches, an unusual depth; frost all out on 12th.

Atchison, Kan.—First steamboat from above on 4th, and from below on 7th.

Council Grove, Kan.—An "Indian summer" month, and 21 days earlier than any March since this became a State.

Lawrence, Kan.—Snow to whiten the ground on the 1st; and a flurry on the 26th.

Elkhorn, Neb.—Month exceeded in warmth only by March, 1860; wheat and oats generally sown, and an immense breadth of the former.

Salt Lake City, Utah.—Planting going on well till 23d, when a snow-storm commenced which laid five inches deep on 24th, though much melted as it fell. It extended over a large district.

Helena, Montana.—Month unprecedented here in the memory of residents for fine weather and absence of storms. The frost is out of ground; the Missouri river opened two weeks ago, but the water is lower than last fall, with little snow in the mountains to raise it.